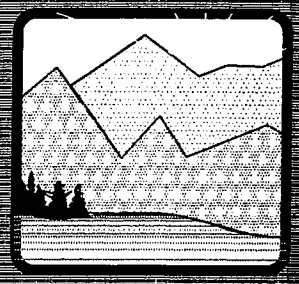
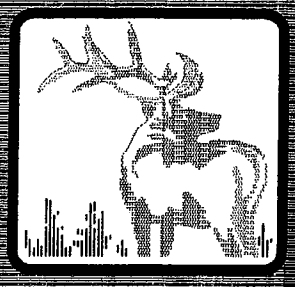
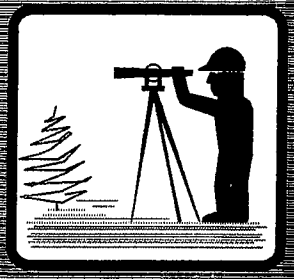






Hydrometrics,Inc.

Roads and Transportation Baseline Investigation Santa Fe Pacific Gold, Elkhorn Project Jefferson County, Montana

COPY

Prepared For:

Santa Fe Pacific Gold Corporation
Albuquerque, New Mexico

Prepared By:

Hydrometrics, Inc.
Consulting Scientists and Engineers

September 1994

AVERAGE DAILY TRAFFIC FOR EACH WEEK OF THE YEAR 1979 PAGE 68
REGION = 1 FOREST = 9 DISTRICT = 2 SITE = 44
WEEK CONFIGURATION = TU WE TH FR SA SU MO HIGHEST AVERAGE DAILY VOLUME IN YEAR = 54

WEEK	FROM	TO	AV. VOL.	NO. OBS.	PERCENT OF HIGHEST AVERAGE DAILY FLOW 0 10 20 30 40 50 60 70 80 90 100
1	1/ 1	1/ 1	-1	0	
2	1/ 2	1/ 8	19	7	(35)**********
3	1/ 9	1/15	21	7	(39)**********
4	1/16	1/22	21	7	(39)**********
5	1/23	1/29	21	7	(39)**********
6	1/30	2/ 5	21	7	(39)**********
7	2/ 6	2/12	21	7	(39)**********
8	2/13	2/19	21	7	(39)**********
9	2/20	2/26	21	7	(39)**********
10	2/27	3/ 5	21	7	(39)**********
11	3/ 6	3/12	21	7	(39)**********
12	3/13	3/19	21	7	(39)**********
13	3/20	3/26	21	7	(39)**********
14	3/27	4/ 2	20	7	(37)**********
15	4/ 3	4/ 9	20	7	(37)**********
16	4/10	4/16	20	7	(37)**********
17	4/17	4/23	20	7	(37)**********
18	4/24	4/30	28	7	(52)**********
19	5/ 1	5/ 7	34	7	(63)**********
20	5/ 8	5/14	34	7	(63)**********
21	5/15	5/21	34	7	(63)**********
22	5/22	5/28	34	7	(63)**********
23	5/29	6/ 4	34	7	(63)**********
24	6/ 5	6/11	34	7	(63)**********
25	6/12	6/18	34	7	(63)**********
26	6/19	6/25	52	7	(96)**********
27	6/26	7/ 2	52	7	(96)**********
28	7/ 3	7/ 9	52	7	(96)**********
29	7/10	7/16	52	7	(96)**********
30	7/17	7/23	52	7	(96)**********
31	7/24	7/30	52	7	(96)**********
32	7/31	8/ 6	54	7	(100)**********
33	8/ 7	8/13	54	7	(100)**********
34	8/14	8/20	54	7	(100)**********
35	8/21	8/27	45	7	(83)**********
36	8/28	9/ 3	43	7	(80)**********
37	9/ 4	9/10	43	7	(80)**********
38	9/11	9/17	43	7	(80)**********
39	9/18	9/24	41	7	(76)**********
40	9/25	10/ 1	40	7	(74)**********
41	10/ 2	10/ 8	31	7	(57)**********
42	10/ 9	10/15	29	7	(54)**********
43	10/16	10/22	30	7	(56)**********
44	10/23	10/29	31	7	(57)**********
45	10/30	11/ 5	31	7	(57)**********
46	11/ 6	11/12	31	7	(57)**********
47	11/13	11/19	31	7	(57)**********
48	11/20	11/26	31	7	(57)**********
49	11/27	12/ 3	31	1	(57)**********
50	12/ 4	12/10	-1	0	
51	12/11	12/17	-1	0	

ROADS AND TRANSPORTATION BASELINE INVESTIGATION

ELKHORN PROJECT

JEFFERSON COUNTY, MONTANA

Prepared for:

Denise Gallegos
Santa Fe Pacific Gold Corporation
Box 27019
Albuquerque, NM 87125

Prepared by:

Hydrometrics, Inc.
2727 Airport Road
Helena, MT 59601

September 1994

DAILY TRAFFIC VOLUME FOR THE YEAR 1979

REGION = 1 FOREST = 9 DISTRICT = 2 SITE = 44

DATE	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1	-1	21	21	20	34	34	52	54	43	40	31	-1
2	19	21	21	20	34	34	52	54	43	40	31	-1
3	19	21	21	20	34	34	52	54	43	29	31	-1
4	19	21	21	20	34	34	52	54	43	29	31	-1
5	19	21	21	20	34	34	52	54	43	29	31	-1
6	19	21	21	20	34	34	52	54	43	29	31	-1
7	19	21	21	20	34	34	52	54	43	29	31	-1
8	19	21	21	20	34	34	52	54	43	29	31	-1
9	19	21	21	20	34	34	52	54	43	29	31	-1
10	21	21	21	20	34	34	52	54	43	29	31	-1
11	21	21	21	20	34	34	52	54	43	29	31	-1
12	21	21	21	20	34	34	52	54	43	29	31	-1
13	21	21	21	20	34	34	52	54	43	29	31	-1
14	21	21	21	20	34	34	52	54	43	29	31	-1
15	21	21	21	20	34	34	52	54	43	29	31	-1
16	21	21	21	20	34	34	52	54	43	29	31	-1
17	21	21	21	20	34	34	52	54	43	29	31	-1
18	21	21	21	20	34	34	52	54	43	29	31	-1
19	21	21	21	20	34	52	52	54	43	29	31	-1
20	21	21	21	20	34	52	52	54	40	31	31	-1
21	21	21	21	20	34	52	52	45	40	31	31	-1
22	21	21	21	20	34	52	52	45	40	31	31	-1
23	21	21	21	20	34	52	52	45	40	31	31	-1
24	21	21	20	20	34	52	52	45	40	31	31	-1
25	21	21	20	20	34	52	52	45	40	31	31	-1
26	21	21	20	20	34	52	52	45	40	31	31	-1
27	21	21	20	34	34	52	52	45	40	31	31	-1
28	21	21	20	34	34	52	52	45	40	31	-1	-1
29	21		20	34	34	52	52	43	40	31	-1	-1
30	21		20	34	34	52	52	43	40	31	-1	-1
31	21		20		34		52	43		31		-1
TOTAL	614	588	643	656	1054	1236	1612	1569	1257	945	837	-1
NO. OBS.	30	28	31	30	31	30	31	31	30	31	27	0
AV. VOL.	20	21	21	22	34	41	52	51	42	30	31	-1

AVERAGE ANNUAL DAILY TRAFFIC = 33.3667
STANDARD DEVIATION = 11.9006
MAXIMUM DAILY VOLUME FOR THE YEAR = 54
MINIMUM DAILY VOLUME FOR THE YEAR = 19

TABLE OF CONTENTS

CONTROL VARIABLES--

REGION	1
FOREST	9
DISTRICT	2
SITE	44
ROAD	0000258
DIRECTION	B/W
YEAR	1979

REPORTS REQUESTED--

PRINT-OUT AND GRAPH--DAILY TRAFFIC VOLUME FOR THE YEAR
GRAPH--AVERAGE VOLUME FOR EACH WEEK OF THE YEAR

LIST OF FIGURES

LIST OF TABLES

52	12/21	12/27	.17	7	(24)	**********
53	12/28	12/31	17	4	(24)	**********

LIST OF ATTACHMENTS

AVERAGE DAILY TRAFFIC FOR EACH WEEK OF THE YEAR 1978
REGION = 1 FOREST = 9 DISTRICT = 2 SITE = 44
WEEK CONFIGURATION = TH FR SA SU MO TU WE . HIGHEST AVERAGE DAILY VOLUME IN YEAR = 42

WEEK	FROM	TO	AV. VOL.	NO. OBS.	PERCENT OF HIGHEST AVERAGE DAILY FLOW (0 10 20 30 40 50 60 70 80 90 100)
1	1/ 1	1/ 4	-1	0	
2	1/ 5	1/11	-1	0	
3	1/12	1/18	-1	0	
4	1/19	1/25	-1	0	
5	1/26	2/ 1	-1	0	
6	2/ 2	2/ 8	-1	0	
7	2/ 9	2/15	-1	0	
8	2/16	2/22	-1	0	
9	2/23	3/ 1	-1	0	
10	3/ 2	3/ 8	-1	0	
11	3/ 9	3/15	-1	0	
12	3/16	3/22	-1	0	
13	3/23	3/29	-1	0	
14	3/30	4/ 5	-1	0	
15	4/ 6	4/12	-1	0	
16	4/13	4/19	-1	0	
17	4/20	4/26	-1	0	
18	4/27	5/ 3	-1	0	
19	5/ 4	5/10	-1	0	
20	5/11	5/17	-1	0	
21	5/18	5/24	-1	0	
22	5/25	5/31	-1	0	
23	6/ 1	6/ 7	-1	0	
24	6/ 8	6/14	56	6	(78)**********
25	6/15	6/21	56	7	(78)**********
26	6/22	6/28	56	7	(78)**********
27	6/29	7/ 5	56	7	(78)**********
28	7/ 6	7/12	56	7	(78)**********
29	7/13	7/19	56	7	(78)**********
30	7/20	7/26	56	7	(78)**********
31	7/27	8/ 2	56	7	(78)**********
32	8/ 3	8/ 9	64	7	(89)**********
33	8/10	8/16	64	7	(89)**********
34	8/17	8/23	64	7	(89)**********
35	8/24	8/30	71	7	(99)**********
36	8/31	9/ 6	71	7	(99)**********
37	9/ 7	9/13	71	7	(99)**********
38	9/14	9/20	58	7	(81)**********
39	9/21	9/27	58	7	(81)**********
40	9/28	10/ 4	72	7	(100)**********
41	10/ 5	10/11	72	7	(100)**********
42	10/12	10/18	72	7	(100)**********
43	10/19	10/25	47	7	(65)**********
44	10/26	11/ 1	29	7	(40)**********
45	11/ 2	11/ 8	39	7	(54)**********
46	11/ 9	11/15	41	7	(57)**********
47	11/16	11/22	26	7	(36)**********
48	11/23	11/29	26	7	(36)**********
49	11/30	12/ 6	26	7	(36)**********
50	12/ 7	12/13	26	7	(36)**********
51	12/14	12/20	23	7	(32)**********

ROADS AND TRANSPORTATION BASELINE INVESTIGATION

ELKHORN PROJECT

JEFFERSON COUNTY, MONTANA

1.0 INTRODUCTION

The following report discusses the roads and transportation system located in the vicinity of the Santa Fe Pacific Gold Corporation's (Santa Fe) proposed Elkhorn Mine in Jefferson County, Montana. Information pertaining to U.S. Forest Service trails located within the Elkhorn Project area is detailed in the Recreational Resources Baseline Report.

As part of the proposed mining project's state and federal permit applications, the roads and transportation system in the general area must be characterized. This baseline information may then be used by the agencies to prepare an Environmental Impact Statement (EIS) in compliance with the Montana Environmental Policy Act (MEPA) and the National Environmental Policy Act (NEPA). The objective of this baseline report is to identify and describe existing roads and transportation resources in the Elkhorn Mountains area which may be affected by development of the proposed mine. This report describes the methodology used and the results obtained during the roads and transportation baseline investigation.

DAILY TRAFFIC VOLUME FOR THE YEAR 1978

REGION = 1 FOREST = 9 DISTRICT = 2 SITE = 44

DATE	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1	-1	-1	-1	-1	-1	-1	56	56	71	72	29	26
2	-1	-1	-1	-1	-1	-1	56	56	71	72	29	26
3	-1	-1	-1	-1	-1	-1	56	64	71	72	41	26
4	-1	-1	-1	-1	-1	-1	56	64	71	72	41	26
5	-1	-1	-1	-1	-1	-1	56	64	71	72	41	26
6	-1	-1	-1	-1	-1	-1	56	64	71	72	41	26
7	-1	-1	-1	-1	-1	-1	56	64	71	72	41	26
8	-1	-1	-1	-1	-1	-1	56	64	71	72	41	26
9	-1	-1	-1	-1	-1	56	56	64	71	72	41	26
10	-1	-1	-1	-1	-1	56	56	64	71	72	41	26
11	-1	-1	-1	-1	-1	56	56	64	71	72	41	26
12	-1	-1	-1	-1	-1	56	56	64	71	72	41	26
13	-1	-1	-1	-1	-1	56	56	64	71	72	41	26
14	-1	-1	-1	-1	-1	56	56	64	58	72	41	26
15	-1	-1	-1	-1	-1	56	56	64	58	72	41	26
16	-1	-1	-1	-1	-1	56	56	64	58	72	26	26
17	-1	-1	-1	-1	-1	56	56	64	58	72	26	26
18	-1	-1	-1	-1	-1	56	56	64	58	72	26	26
19	-1	-1	-1	-1	-1	56	56	64	58	72	26	17
20	-1	-1	-1	-1	-1	56	56	64	58	72	26	17
21	-1	-1	-1	-1	-1	56	56	64	58	72	26	17
22	-1	-1	-1	-1	-1	56	56	64	58	29	26	17
23	-1	-1	-1	-1	-1	56	56	64	58	29	26	17
24	-1	-1	-1	-1	-1	56	56	71	58	29	26	17
25	-1	-1	-1	-1	-1	56	56	71	58	29	26	17
26	-1	-1	-1	-1	-1	56	56	71	58	29	26	17
27	-1	-1	-1	-1	-1	56	56	71	58	29	26	17
28	-1	-1	-1	-1	-1	56	56	71	72	29	26	17
29	-1		-1	-1	-1	56	56	71	72	29	26	17
30	-1		-1	-1	-1	56	56	71	72	29	26	17
31	-1		-1		-1		56	71		29		17
TOTAL	-1	-1	-1	-1	-1	1232	1736	2024	1951	1802	981	689
NO. OBS.	0	0	0	0	0	22	31	31	30	31	30	31
AV. VOL.	-1	-1	-1	-1	-1	56	56	65	65	58	33	22

AVERAGE ANNUAL DAILY TRAFFIC = 50.5583
STANDARD DEVIATION = 18.1208
MAXIMUM DAILY VOLUME FOR THE YEAR = 72
MINIMUM DAILY VOLUME FOR THE YEAR = 17

2.0 METHODOLOGY

On-site information concerning roads and transportation was collected by Santa Fe during the roads and transportation baseline investigation, and has been used in conjunction with existing agency resource information to characterize the area's key roads and transportation resources. Local, state, and federal agencies providing information concerning the transportation system included Jefferson County, the Montana Department of Transportation (MDOT), the Federal Aviation Administration (FAA), the Helena National Forest (HNF), and the Deerlodge National Forest (DNF). Pertinent documents and other information provided by these agencies were reviewed for use in describing the roads and transportation resources in the vicinity of the project. These documents included:

- 1981 Elkhorn Wilderness Study (HNF and DNF, 1981)
- Final Deerlodge National Forest Plan (DNF, 1987)
- Landscape Analysis Documentation prepared by the Helena National Forest (HNF, 1993)
- Deerlodge National Forest Travel Management Plan (DNF, 1990)

Supplemental site-specific information was gathered by Santa Fe during October 1993 and February 1994 on-site recreational use surveys, and from traffic counters installed on county and U.S. Forest Service (USFS) roads within the project area. Vehicle road use information obtained from the traffic counters is discussed in Section 5.1.3 and detailed in Attachment 1 of this report. Road use-related information obtained from the recreational surveys is discussed in Section 5.1.3 and in the Recreational Resources Baseline Report for the Elkhorn Project.

CONTROL VARIABLES--

REGION	1
FOREST	9
DISTRICT	2
SITE	44
ROAD	258
DIRECTION	B/W
YEAR	1978

REPORTS REQUESTED--

PRINT-OUT AND GRAPH--DAILY TRAFFIC VOLUME FOR THE YEAR
GRAPH--AVERAGE VOLUME FOR EACH WEEK OF THE YEAR

3.0 OVERVIEW

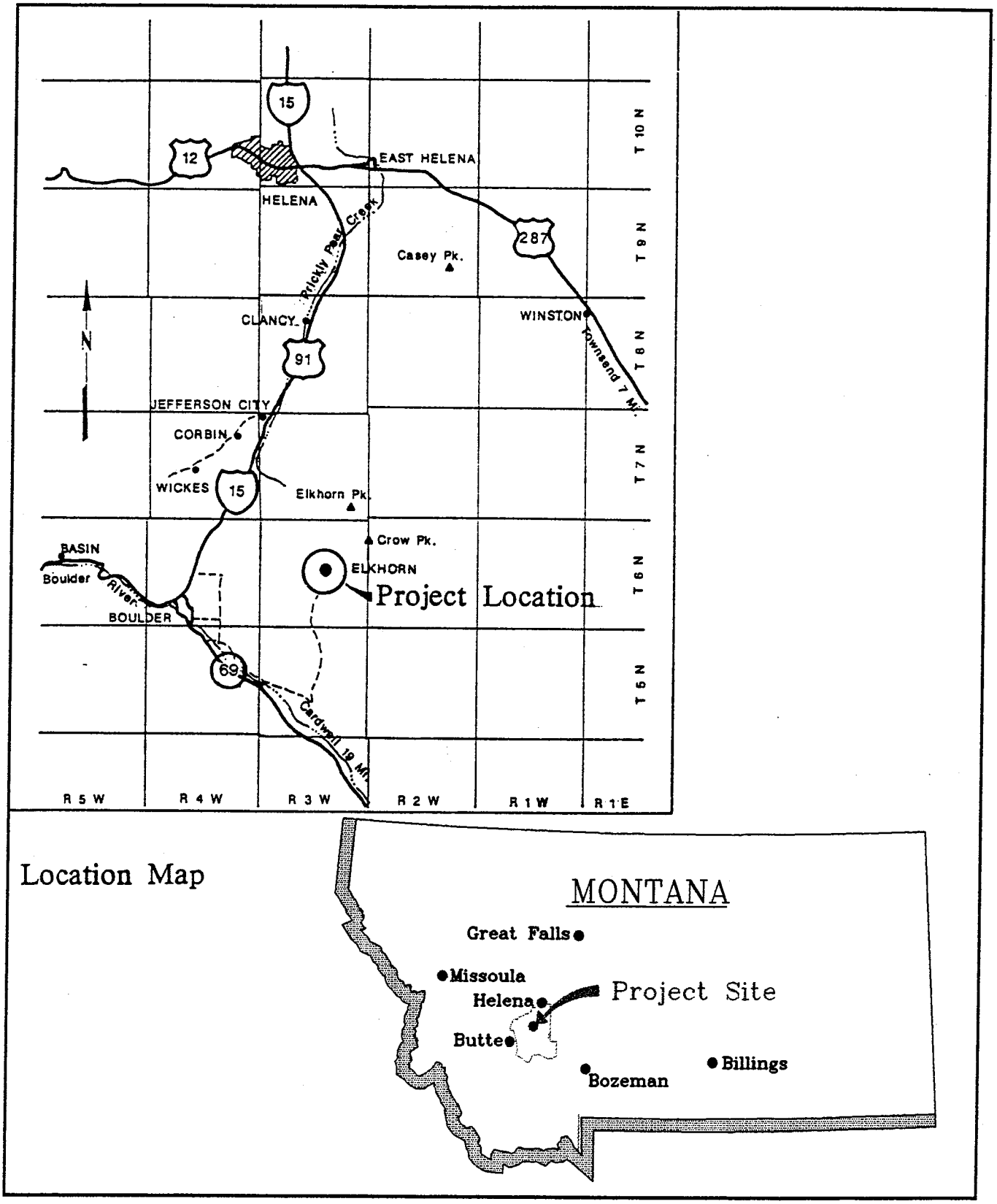
The Elkhorn Project is located near the Elkhorn townsite in the southwestern portion of the Elkhorn Mountains. Project location and major highway routes in the vicinity of the project area are shown on Figure 1. A large portion of the lands in the vicinity of the Elkhorn Project are public lands administered by the USFS, and include mining claims not controlled by Santa Fe.

USFS lands adjacent to the Elkhorn Project are administered by the Deerlodge National Forest (DNF), while USFS lands located north and east of the general project area are administered by the Helena National Forest (HNF). The Elkhorn Project would be developed primarily on private lands (patented mining claims) controlled by Santa Fe, as well as some public lands administered by the DNF. South of the DNF boundary, the project area includes public lands administered by the Bureau of Land Management (BLM), state- owned lands administered by the Montana Department of State Lands (MDSL), and privately-owned lands.

Roads in the immediate vicinity of the Elkhorn Project are primarily forest access roads administered by the DNF and/or Jefferson County. Roads administered by Jefferson County are generally located south of the DNF boundary and north of State Route 69 (Figure 1). Boulder, Montana is located approximately 10 miles southwest of the Elkhorn Project, and is the nearest community offering public services. Interstate Highway I-15 provides the major transportation route between Boulder and the major cities of Helena to the north, and Butte to the south. State Route 69 provides the main transportation route between Boulder and the community of Whitehall, Montana, approximately 40 miles south of Boulder. Primary motor vehicle access from Boulder to the Elkhorn Project is provided by County Road 258 (Elkhorn Road) via State Route 69 and Sloan's Lane. The following sections discuss the area's roads by management jurisdiction.

ATTACHMENT 4

USFS 1978-1979 VEHICLE COUNTS
COUNTY ROAD 258
JEFFERSON COUNTY, MONTANA



Proj. No: SFES01
Dwg. No: 31394H03
Drawn By: GBH
Last Update: 9/22/94 GBH
Ref. Dwg: 31394T

Hydrometrics, Inc.

Figure 1
Regional Location Map
Elkhorn Project, Jefferson County, Montana
Santa Fe Pacific Gold Corporation

4.0 MONTANA DEPARTMENT OF TRANSPORTATION

4.1 STATE ROUTE 69

State Route 69 is located south of the Elkhorn Project, and is the closest highway to the project site. It is the primary transportation route between the communities of Boulder and Whitehall, Montana. The main access route to the Elkhorn Project area is provided from State Route 69 (south of Boulder) via Sloan's Lane and Jefferson County Road 258 (Elkhorn Road). State Route 69 also provides a connecting access between Interstate Highway I-15 (at Boulder) and Interstate Highway I-90 (at Whitehall). The route is a two-lane, paved highway administered and maintained by the Montana Department of Transportation (MDOT). Information identifying average daily traffic, recent vehicle counts, and accident rates for State Route 69 between Boulder and Whitehall, Montana is included in Attachment 2 of this report. Road width, pavement thickness, and road base thickness information for State Route 69 is included in Table 1.

TABLE 1. ROAD WIDTH, AND THICKNESS OF PAVEMENT AND ROAD BASE ALONG STATE ROUTE 69 BETWEEN BOULDER AND WHITEHALL, JEFFERSON COUNTY, MONTANA. (Source: Pers. Comm., John Wright, Montana Department of Transportation, 9/17/93)

Milepost	Road Width	Thickness	
		Pavement	Road Base
5.046 - 6.106 (Whitehall)	30 ft.	0.30 ft.	1.5 ft.
6.106 - 22.185	26 ft.	0.50 ft.	0.60 ft.
22.185* - 28.186	27 ft.	0.45 ft.	0.80 ft.
28.186 - 31.026	24 ft.	0.24 ft.	0.75 ft.
31.026 - 37.030 (Boulder)	24 ft.	0.20 ft.	0.75 ft.

* Milepost 22.185 to Boulder is scheduled for improvement by MDOT in April 1998, and will likely be resurfaced and widened.

Route Management System (RMS)
Road Log Report

ROUTE: 8517- SYS: FDR NAME: BROWN GULCH FOREST: 09
BEGIN MP: 0 BEG TERMINI: CO.RD RESOURCE: RANGE
LENGTH: 6.62 END TERMINI: SEC33 TRS: T0050N R0040W S020
QUAD NAME: BOULDER EAST QUAD INDEX: 46112441

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: PO SURFACE: AGG
COUNTY: 043 MAINT RESP: PO CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 14 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8517- FDR
MP: 2.4 Len: 4.22 Jurisdiction: FS
MP: 2.4 Len: 4.22 Maint Resp: FS Current: 2 Planned:
MP: 2.4 Len: 4.22 Surface type: NAT

Average daily traffic (ADT) information was collected by the MDOT at four stations along State Route 69 in 1992 (Table 2). In addition to the 1992 data, historical ADT information is available for all stations except Station 2. The most recent ADT information available from the MDOT for State Route 69 is vehicle use classification and AM/PM peak hour totals obtained in May 1993 at Station 2, and reported separately for the north and south-bound lanes. This information is in Attachment 2.

TABLE 2. 1992 AVERAGE DAILY TRAFFIC AT FOUR STATIONS ALONG STATE ROUTE 69, JEFFERSON COUNTY, MONTANA (Source: Pers. Comm., Dennis Holtz, Montana Department of Transportation, 9/20/93)

Station	Average Daily Traffic (ADT)
1) 5 miles south of Boulder, MT.	660
2) 10 miles north of Highway 359 Jct.	560
3) 1 mile north of Highway 359 Jct.	650
4) 0.5 mile west of Highway 359 Jct.	1060

Attachment 2 also contains MDOT accident rate and severity information recorded for State Route 69 (Whitehall city limits to Boulder city limits) for the 10-year period from July 1, 1983 to June 30, 1993. This information shows that the accident rate for all vehicles along this highway is slightly less than the state average (1.44 and 1.47, respectively), while the accident rate for large trucks are slightly greater than the state averages (1.53 and 1.35, respectively).

Route Management System (RMS)
Road Log Report

ROUTE: 8526- SYS: FDR NAME: WATER TANK FOREST: 09
BEGIN MP: 0 BEG TERMINI: SEC 23 RESOURCE: ADMIN
LENGTH: 1.42 END TERMINI: TRS: T0050N R0030W S030
QUAD NAME: DEVILS FENCE NW QUAD INDEX: 4611332

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: OF SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 5 TRAVEL PLAN:
WIDTH: 14 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8526- FDR

4.2 INTERSTATE HIGHWAYS I-15 AND I-90

Boulder, Montana, is located at the northern terminus of State Route 69 at its intersection with Interstate Highway I-15 (Figure 1). Interstate Highway I-15 is a paved, four lane highway that provides the major north-south interstate route through Montana. The highway links Boulder with the major cities of Helena to the north, and Butte to the south.

Interstate Highway I-90 (Figure 1) is a paved, four-lane highway, and is the major east-west Interstate route through Montana. From the Elkhorn Project area, access to Interstate Highway I-90 is gained by traveling approximately 35 miles south on State Route 69 to Cardwell, Montana (Figure 1).

Route Management System (RMS)
Road Log Report

ROUTE: 8540- SYS: FDR NAME: TACOMA PK SO. FOREST: 09
BEGIN MP: 0 BEG TERMINI: SEC 35 RESOURCE: TIMBER
LENGTH: .77 END TERMINI: TRS: T0060N R0030W S340
QUAD NAME: DEVILS FENCE NW QUAD INDEX: 46111332

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8540- FDR

5.0 U.S. FOREST SERVICE ROADS AND JEFFERSON COUNTY ROADS

The following section discusses U.S. Forest Service (USFS) roads and Jefferson County roads in the vicinity of the Elkhorn Project. The project area is accessed primarily by a series of aggregate and native material-surfaced roads originating from State Route 69. The main access roads to the project area are Sloan's Lane (an un-numbered county road typically accessed from State Route 69), County Road 258 (Elkhorn Road) leading from Sloan's Lane to the Elkhorn townsite, and improved county and USFS roads accessing the Dry Creek Drainage from the south (County Road 517) and Johnny Gulch from the east (County Road 621) (Figure 2). Other unimproved county and USFS roads access the area from the east and west. It should be noted that the historic and present ownership of some roads in this area is uncertain, and is currently being inventoried and reviewed by these agencies (Pers. Comm., Paul Ruffato, Jefferson County Commissioner, 1/5/94). Final resolution of ownership and/or management through this on-going process may alter some portions of the following discussion.

5.1 U.S. FOREST SERVICE ROADS

U.S. Forest Service (USFS) roads in the vicinity of the Elkhorn Project are shown on Figure 2, and are administered by the Jefferson Ranger District of the Deerlodge National Forest (DNF). Most of the roads in the Elkhorn Mountains were constructed prior to 1900, and are believed to have been established for mining or mining-related activities, such as timber harvest. (HNF, 1993)

5.1.1 U.S. Forest Service Road Management

In the Final Forest Plan for the Deerlodge National Forest prepared in 1987 (DNF, 1987), the following is identified as an objective under Forestwide Management Direction:

> **Facilities** - Transportation facilities will be constructed, managed, and maintained in a cost-effective way to meet the land and resource objectives of the forest.

Route Management System (RMS)
Road Log Report

ROUTE: 8539- SYS: FDR NAME: TACOMA GULCH FOREST: 09
BEGIN MP: 0 BEG TERMINI: TACOMA PARK RESOURCE: TIMBER
LENGTH: 1.95 END TERMINI: TRS: T0050N R0030W S030
QUAD NAME: DEVILS FENCE NW QUAD INDEX: 46111332

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8539- FDR

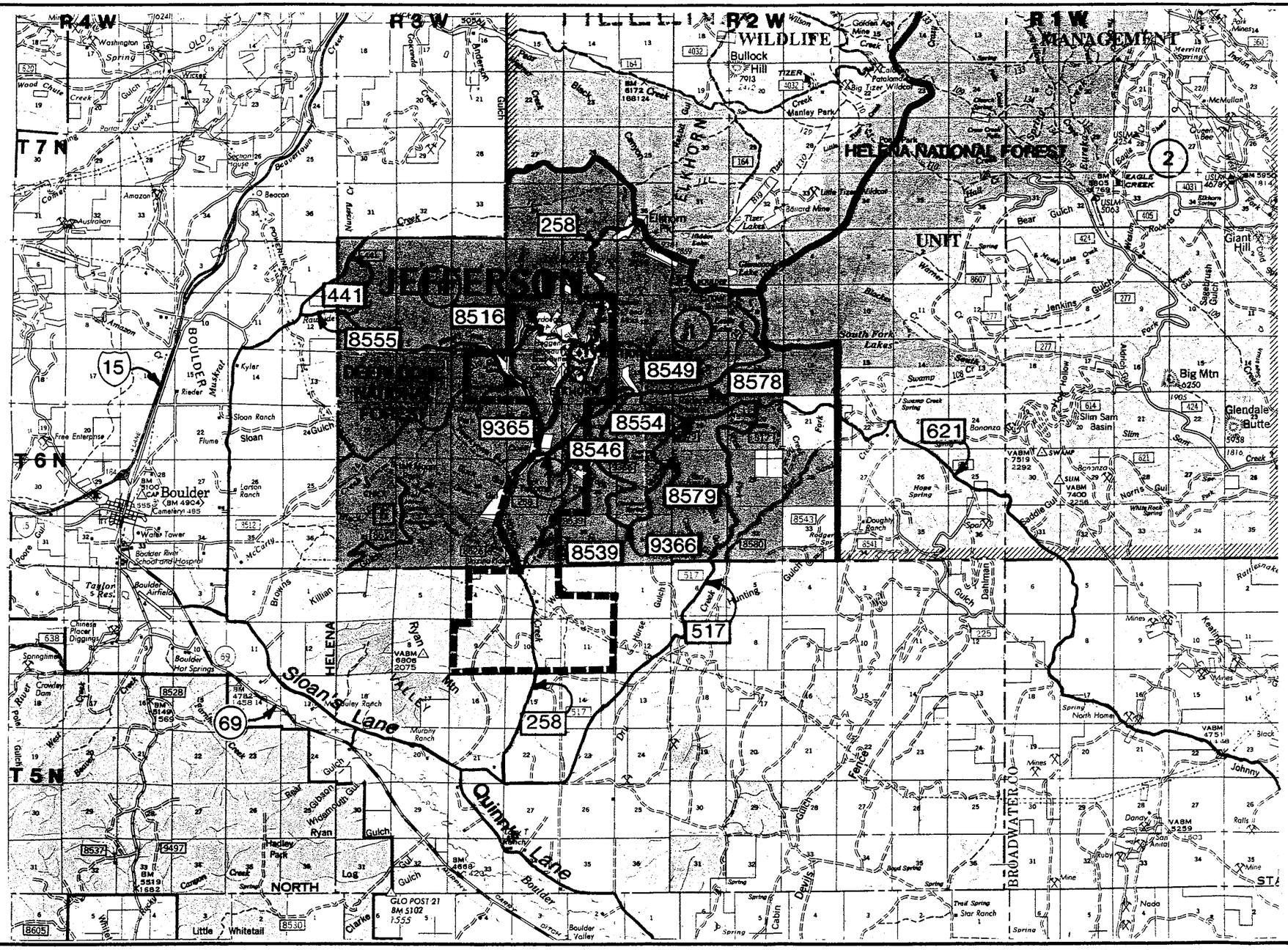
Route Management System (RMS)
Road Log Report

ROUTE: 8581- SYS: FDR NAME: FOREST: 09
BEGIN MP: 0 BEG TERMINI: EAST FK DRY CR RESOURCE: RANGE
LENGTH: .3 END TERMINI: SEC28 TRS: T0060N R0020W S280
QUAD NAME: DEVILS FENCE NE QUAD INDEX: 46111331

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8581- FDR



Legend

- (1) Yearlong Off-Road Travel Restriction for All Motorized Vehicles on USFS Roads Open For Travel Yearlong
- [5] Oct 15 – June 15 Closure for Motorized Vehicles on USFS Road 8517
- 441 Road with Road Number
- Project Area
- Boundary Between Deerlodge National Forest and Helena National Forest

31294H06

NORTH

Figure 2
Main Roads in the Vicinity of Elkhorn, Montana
Santa Fe Pacific Gold Corporation
Elkhorn Project,
Jefferson County, Montana

Route Management System (RMS)
Road Log Report

ROUTE: 8580- SYS: FDR NAME: FOREST: 09
BEGIN MP: 0 BEG TERMINI: TRAIL 77 RESOURCE: RANGE
LENGTH: 2.75 END TERMINI: TRS: T0060N R0020W S320
QUAD NAME: DEVILS FENCE NW QUAD INDEX: 46111332

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8580- FDR

The Final Forest Plan (DNF, 1987) provides the following as Standards for Future Desired Condition pertaining to recreation-related travel management planning:

Travel Map

1. Implement restrictions for off-road vehicle (ORV) use through the Deerlodge Forest Travel Map, as per Executive Order 11644.

2. Use the Forest Travel Management Planning process to review, evaluate, and implement the goals and standards of the management areas with regard to road, trail, and areawide motorized vehicle use.

3. Review the Forest Travel Map annually and update as needed. The Travel Map, which is part of the Forest Plan, will define management of roads, trails, areas and lakes for the safety of users, for economic reasons, for the protection of resources, and for the resolution of conflict between users. It will be consistent with Forestwide and management area standards. Intermediate emergency orders may be implemented between updates.

Based upon the Deerlodge National Forest's 1990 revisions to its Forest Visitor/Travel Map (DNF, 1990), all USFS roads within the Elkhorn portion of the Deerlodge National Forest, with the exception of one, are open to travel yearlong by motorized vehicles (Figure 2). Motorized travel off these routes by any road vehicle, trailbike/ATV, or snowmobile, however, is prohibited yearlong to protect wilderness and semi-primitive non-motorized recreation opportunities. A portion of USFS Road 8517 is annually closed to all vehicle traffic during the period of October 15 to December 1 to protect hunting recreation opportunities. The Travel Management Plan for the Elkhorn Mountains portion of the Deerlodge National Forest is currently being reviewed by the DNF, and some road restrictions in this area could be subject to change in 1994 or 1995 (Pers. Comm., Ron Roginske, Deerlodge National Forest, January 5, 1994).

Route Management System (RMS)
Road Log Report

ROUTE: 8551- SYS: FDR NAME: UNION MINE FOREST: 09
BEGIN MP: 0 BEG TERMINI: RD 258 RESOURCE: MINERL
LENGTH: .23 END TERMINI: SEC 11 TRS: T0060N R0030W S110
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: PO SURFACE: NAT
COUNTY: 043 MAINT RESP: PO CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8551- FDR

The Final Forest Plan (DNF, 1987) provides the following as Standards for the Future Desired Condition pertaining to Facilities:

FACILITIES

1. Transportation system development and management will be determined by the Resource Management Objectives for the area. In development of specific Road Management Objectives for each planned or existing road, consideration will be given to road density, costs of development and maintenance, user safety, user comfort, season of use, types of use, and other resource values.

2. Construct Forest development roads only under the authority of an approved transportation plan. Other road construction will be evaluated on a case-by-case basis.

3. Temporary roads will be evaluated on a case-by-case basis and reclaimed after use.

4. Base travel management decisions on user needs, public safety, resource protection, economics, the goals of the Management Areas involved, and Hunting Recreation Opportunity Objectives. Roads will be left open or closed for all or part of the year based on these criteria. Variances will be considered on a case-by-case basis.

5. Roads will be maintained to the level needed to meet the following operational objectives generated and documented in the Road Management Objectives: resource protection, road investment protection, user safety, user comfort, and travel efficiency.

In reference to the Hunting Recreation Opportunity Objectives mentioned in item 4 of the Standards for Future Desired Conditions, Appendix N of the Final Forest Plan describes the Hunting Recreation Environment of the South Elkhorns as "Roaded Moderately Developed" with a Maximum Open Road Density Objective of 0.65 miles of road per 1.0 square mile of land (DNF, 1987).

Route Management System (RMS)
Road Log Report

ROUTE: 8553- SYS: FDR NAME: MINE LOOP FOREST: 09
BEGIN MP: 0 BEG TERMINI: LOOP TO 258 RD RESOURCE: MINERL
LENGTH: .3 END TERMINI: TRS: T0060N R0030W S140
QUAD NAME: CLANCY SW QUAD INDEX: 46111331

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8553- FDR

Since preparation of the 1987 Final Forest Plan (DNF, 1987), additional cooperation between the various resource agencies administering lands within the Elkhorn Mountains has led to a unique management system within the Elkhorns. In June 1991, a Memorandum of Understanding (MOU) further defining the management strategy for the Elkhorn Mountains was signed by the Deerlodge National Forest (DNF), the Helena National Forest (HNF), the Bureau of Land Management (BLM), and the Montana Department of Fish, Wildlife, and Parks. The Elkhorn Cooperative Management Area (ECMA) is defined in the MOU and is comprised of National Forest, BLM, and private lands in and around the Elkhorn Mountains. Under the MOU, lands within the ECMA are to be managed as an ecological unit stressing biological diversity and ecosystem processes.

USFS roads in the vicinity of the Elkhorn Project are included in the Elkhorn Cooperative Management Area (ECMA). Roads within the ECMA are described as follows in the 1993 Elkhorns Landscape Analysis Documentation (HNF, 1993):

Existing Condition:	Substandard roads and road signing; use levels highest on "main" roads; use on all roads high for hunting; some trailheads not accessible by 2-wheel drive vehicles; signing of poor quality and inconsistent across boundaries; generally within Forest Plan open road densities.
Desired Condition:	Variety of road standards targeted for a hierarchy of uses; transportation system meets both user and other resource objectives; standards met for roads and trails on transportation system; open road densities are within recommended levels; access to public lands is ample; public is aware of opportunities and restrictions.
Management Direction:	Complete a transportation plan for the Elkhorns; clear, consistent travel management; some roads and trails targeted for specific user groups; prepare sign plans for roads and trails and travel management; obtain ROW where needed across private lands.

The Elkhorns Landscape Analysis Documentation (HNF, 1993) further notes that "roads and trails are often the result of repeated use rather than being intended or engineered. Hence, many do not meet USFS Region 1 standards."

Route Management System (RMS)
Road Log Report

ROUTE: 9362- SYS: FDR NAME: ELKHORN PICNIC FOREST: 09
BEGIN MP: 0 BEG TERMINI: RD 258 SEC 14 RESOURCE: RECREA
LENGTH: .58 END TERMINI: TRS: T0060N R0030W S140
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: C CURRENT LEVEL: 3 PLANNED: 3
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 14 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED: 5
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

9362- FDR

5.1.2 U.S. Forest Service Road Inventory

The Deerlodge National Forest (DNF) maintains an inventory of USFS roads within the DNF portion of the Elkhorn Mountains. The inventory includes Road Log Reports for individual USFS roads within the Route Management System (RMS). The Road Log Reports contain information pertaining to the assigned USFS road number, road length, legal location, width, maintenance responsibility, jurisdiction, surface materials, service life, and other details, including informational changes by mile-post. Available Road Log Reports for USFS roads in the vicinity of the Elkhorn Project are in Attachment 3. Main USFS roads in the vicinity of the Elkhorn Project are shown on Figure 2.

An updated USFS road inventory for the DNF portion of the Elkhorn Mountains is being prepared by the DNF for use in a South Elkhorns Implementation Area Analysis document, which is being prepared in response to the Elkhorns Cooperative Management Area (ECMA) agreement. Completion of the South Elkhorns Implementation Area Analysis document is anticipated in 1995 (Pers. Comm., Ron Roginske, Deerlodge National Forest, January 5, 1994).

5.1.3 U.S. Forest Service Road Use

Information concerning the use of area roads was obtained as part of the autumn 1993 and winter 1994 recreational use surveys conducted by Santa Fe for the Elkhorn Project. This information was obtained through on-site interviews of vehicle occupants at a point along the Elkhorn Road (County Road 258) immediately south of the Elkhorn townsite. Mail-in questionnaires were also provided to the occupants. A detailed discussion of the survey results is included in the Recreational Resource Baseline Report for the Elkhorn Project.

Based upon the results of the survey, 27 out of 87 recreational survey respondents reported that their travel in the project area during the survey period was a "first time" visit. Travel to the area with a frequency of 1 to 5 times a year was reported as the second most frequent travel return category (24 respondents). Six respondents reported a return frequency of greater than 20 visits annually. The most popular access mode reported for recreational use of the local area was four-wheel drive vehicles (51 respondents), followed by passenger cars

Route Management System (RMS)
Road Log Report

ROUTE: 8516- SYS: FDR NAME: MOREAU MINE FOREST: 09
BEGIN MP: 0 BEG TERMINI: 9365 RESOURCE: MINERL
LENGTH: 2.6 END TERMINI: 9362 TRS: T0060N R0030W S150
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8516- FDR

(27 respondents). Use of mountain bikes, 3 or 4-wheelers, stock trucks, or passenger trucks was significantly less.

About one-third of the respondents did not identify a specific destination during their visit to the area. This may indicate that many visitors do not have a pre-determined destination in mind when traveling the area's roads, preferring to "explore" the area primarily by motorized vehicle. This may also reflect the popular use of the area's roads for "road-hunting" during the survey period. For those respondents identifying a specific destination during their visit, the Elkhorn townsite (via County Road 258) was the most commonly reported destination.

Based upon the results of the autumn 1993 and winter 1994 recreational use surveys, local points of interest and activity are the destination of the majority of traffic in the local area, and pass-through traffic to areas beyond the local area is believed to be minor. Traffic use of the Elkhorn Road (County Road 258) occurs primarily to access the Elkhorn townsite or other historic sites or trailheads in the area. Pass-through travel is possible, however, from the Elkhorn townsite to Radersburg via Radersburg Pass on USFS Road 8554 (Figure 2). Eastbound traffic from Elkhorn over Radersburg Pass can access County Road 517 and loop back to the State Route 69 access, or continue east on County Road 621 to Radersburg and State Route 287. Travel over Radersburg Pass is recommended for four-wheel drive vehicles only, and is thought to be light with the majority of use occurring during hunting season (Pers. Comm., Ron Roginske, DNF).

During October 1993, six inductive loop traffic counters were obtained by Santa Fe from the DNF and installed on USFS roads in and around the project area. Roads selected for traffic counters were chosen for their known public use importance, based upon consultation with knowledgeable DNF personnel. Final traffic counter installation locations were reviewed and approved by the DNF. The traffic counters were installed to gather baseline information regarding the density, distribution, and timing of road use near the Elkhorn Project. This information was also gathered for use in the project's Recreational Resources Baseline Report. Prior to installation of the traffic counters in October 1993, road use information was limited to traffic counts conducted by the DNF in 1978 and 1979 for County Road 258 (Elkhorn

Route Management System (RMS)
Road Log Report

ROUTE: 9365- SYS: FDR NAME: NINETY CENT GULCH FOREST: 09
BEGIN MP: 0 BEG TERMINI: RD 258 RESOURCE: TIMBER
LENGTH: 1.66 END TERMINI: SEC 16 TRS: T0060N R0030W S220
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:

DISTRICT: 02	FUNCTION: L	JURISDICTION: FS	SURFACE: NAT
COUNTY: 043	MAINT RESP: FS	CURRENT LEVEL: 1	PLANNED: 1
STATE: 30	TEMPLATE: H	TRAVEL MGMT: 1	TRAVEL PLAN:
WIDTH: 12	SERVICE LIFE: C	SERVICE LEVEL:	DESIGN SPEED: 5
DESIGN TRAFFIC -	Primary: Secondary:		

CHANGES

9365- FDR

Road) approximately 4.8 miles north of the junction with County Road 517 (Dry Creek Road) (Attachment 4).

The procedures used during installation of the traffic counters in 1993 closely followed those outlined in the USDA Forest Service Equipment Development and Test Report No. 7700-9: **Inductive Loops - Their Design, Installation, and Maintenance for Road Traffic Surveillance** (USDA-FS, 1983). A further discussion of installation procedures, and bar graph depictions of traffic counter information obtained for the period of record are in Attachment 1. The inductive loops also were dimensioned to detect snowmobiles and ATV's. Traffic counter locations are described in Table 3, and shown in Figure 3.

TABLE 3. TRAFFIC COUNTER LOCATIONS, SANTA FE PACIFIC GOLD CORPORATION, ELKHORN PROJECT, JEFFERSON COUNTY, MONTANA

Traffic Counter 1	On County Road 258 (Elkhorn Road) approximately 200 feet north of Deerlodge National Forest boundary.
Traffic Counter 2	On USFS Road 8546 (Queen Gulch Road) approximately one-half mile from junction with County Road 258 (Elkhorn Road).
Traffic Counter 3	On USFS Road 9365 (Turnley Creek/Ninety Cent Gulch Road) approximately 200 feet from junction with County Road 258 (Elkhorn Road).
Traffic Counter 4	On USFS Road 8516 (Moreau Mine Road) approximately 200 feet west of County Road 258 (Elkhorn Road).
Traffic Counter 5	On USFS Road 8554 (Radersburg Pass Road) approximately 200 feet east of turn-off to Elkhorn Cemetery.
Traffic Counter 6	On County Road 258 (Elkhorn Road) approximately one-half mile north of Elkhorn townsite.

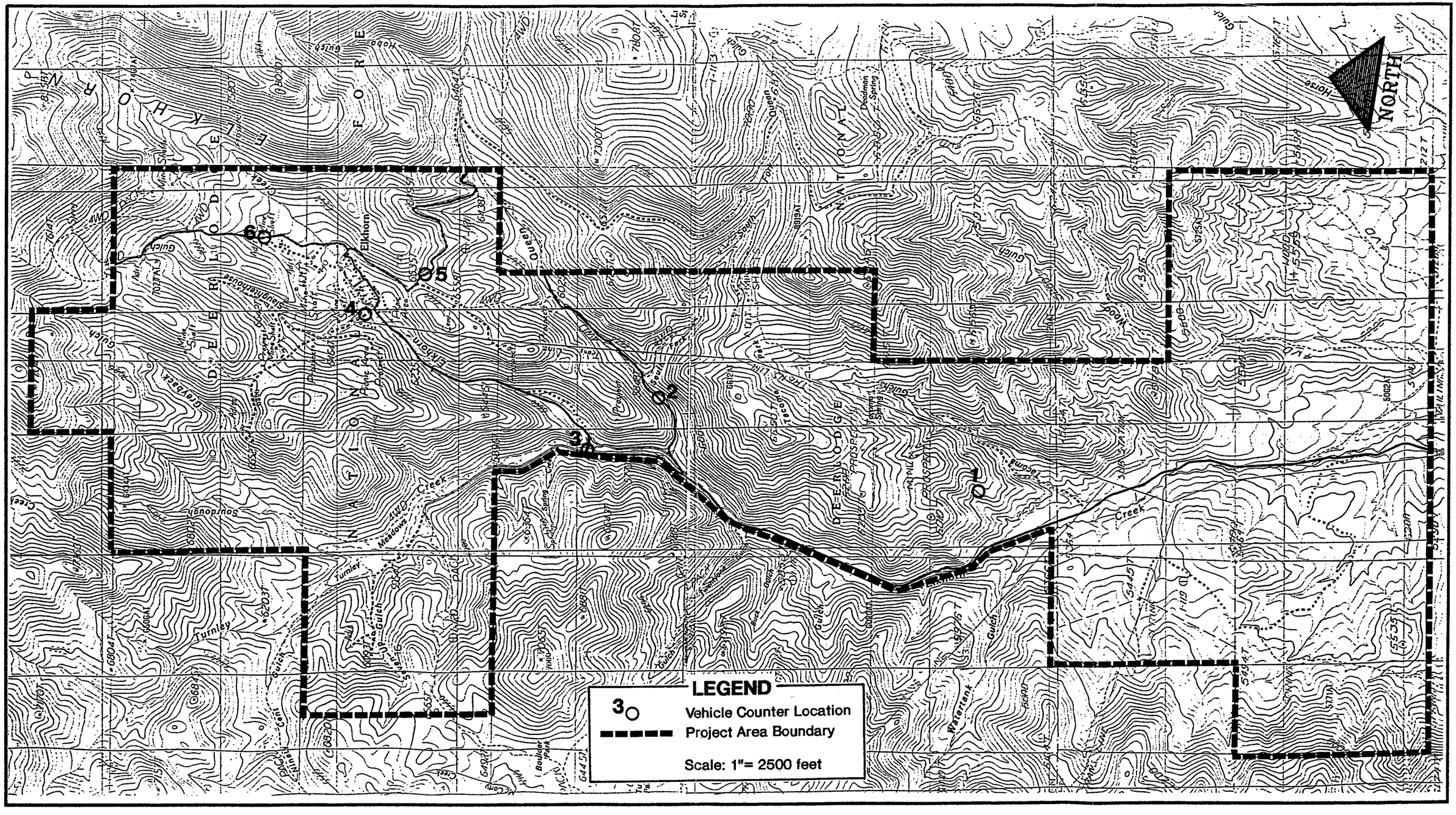
Route Management System (RMS)
Road Log Report

ROUTE: 8549- SYS: FDR NAME: ELKHORN CEMETARY FOREST: 09
BEGIN MP: 0 BEG TERMINI: CITY RESOURCE: HUMAN
LENGTH: .32 END TERMINI: ON THE OLD RR LOC. TRS: T0060N R0030W S140
QUAD NAME: CLANCY SW QUAD INDEX: 46111331

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8549- FDR



Proj. No: SFEB01
Dwg. No: 31294H07
Drawn By: SDP
Last Update:
Ref. Dwg: 31294H05
Rev. Date:

Hydrometrics, Inc.

Figure 3
Vehicle Counter Locations
Santa Fe Pacific Gold Corporation
Elkhorn Project,
Jefferson County, Montana

Route Management System (RMS)
Road Log Report

ROUTE: 8550- SYS: FDR NAME: C & D MINE FOREST: 09
BEGIN MP: 0 BEG TERMINI: TO MINE RESOURCE: MINERL
LENGTH: .23 END TERMINI: TRS: T0060N R0030W S110
QUAD NAME: CLANCY SW QUAD INDEX: 46111331

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8550- FDR

Table 4 summarizes vehicle count information obtained from the traffic counters from October 7, 1993 through August 31, 1994. With the exception of County Road 258 (Elkhorn Road) to the Elkhorn townsite, the monitored roads are not plowed during the winter months. As a result, standard vehicle use of these roads during the winter period depends on the extent and duration of snow conditions, and can vary significantly on an annual basis. Since the inductive loop traffic counters record total motorized road use, including snowmobiles and ATV's, it is not possible to differentiate types of winter motorized vehicle use for these roads. The following discussion, however, includes information concerning whether recorded use was likely limited to snowmobiles and/or ATV's based upon personal observations of road conditions made at the time of traffic counter readings. Although some roads are used by cross-country skiers during the winter, the inductive loop traffic counters do not register this type of use.

County Road 258 - Traffic Counter 1

County Road 258 (Elkhorn Road) is the main access road to the Elkhorn Project and the Elkhorn townsite. Additional discussion of the characteristics of County Road 258 is in Section 5.2.1. Average daily traffic (ADT) recorded at traffic counter 1, located on County Road 258, was 51.5 for the period October 9 to November 30, 1993 (Autumn 1993), 12.1 for the period December 1, 1993 to March 3, 1994 (Winter 1993-94), and 37.0 for the period March 4 through August 31, 1994 (Spring-Summer 1994).

Average daily vehicle counts ranged from 40 vehicles to 89 vehicles during autumn, with the highest traffic density occurring during the opening weekend of the general hunting season. Average daily vehicle counts during the winter period ranged from 9 vehicles to 17 vehicles and during the spring-summer from 16.7 vehicles to 68.6 vehicles. The 1993-94 vehicle count information, which includes all vehicles travelling in both directions, is included in Attachment 1 and summarized in Table 4. County Road 258 is maintained during winter, and the majority of vehicles recorded at traffic counter 1 are believed to be passenger cars and trucks.

Route Management System (RMS)
Road Log Report

ROUTE: 258- SYS: FDR NAME: ELKHORN FOREST: 09
BEGIN MP: 0 BEG TERMINI: CO ROAD RESOURCE: RECREA
LENGTH: 10.78 END TERMINI: FOR BDRY TRS: T0060N R0030W S230
QUAD NAME: DEVILS FENCE NW QUAD INDEX: 46111332

At the beginning of the Route:
DISTRICT: 02 FUNCTION: A JURISDICTION: C SURFACE: AGG
COUNTY: 043 MAINT RESP: C CURRENT LEVEL: 4 PLANNED: 4
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 16 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED: 10
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

258- FDR

MP: 4.17	Len: 4	Width: 14	
MP: 4.17	Len: 6.61	Jurisdiction: FS	
MP: 4.17	Len: 6.61	Surface type: NAT	
MP: 8.17	Len: 2.61	Funct. Class: L	
MP: 8.17	Len: 2.61	Maint Resp: FS	Current: 2 Planned: 2
MP: 8.17	Len: 2.61	Width: 12	

TABLE 4. TRAFFIC COUNTER INFORMATION FROM OCTOBER 8, 1993 TO AUGUST 31, 1994, SANTA FE PACIFIC GOLD CORPORATION, ELKHORN PROJECT, JEFFERSON COUNTY, MONTANA

Traffic Counter	Location	ADT 10/8/93-11/1/93	ADT 11/2/93-11/30/93	ADT 12/1/93-1/4/94	ADT 1/5/94-1/31/94	ADT 2/1/94-3/3/94	ADT 3/4/94-4/6/94	ADT 4/7/94-5/6/94	ADT 5/7/94-6/3/94	ADT 6/4/94-7/6/94	ADT 7/14/94-8/4/94	ADT 8/5/94-8/31/94
1	County Road 258	59.5	43.4	13.1	12.1	10.6	16.7	18.6	36.1	No Data	68.6	63.0
2	FS Road 8546	6.7	6.1	0.6	0.8	0.4	0.9	1.8	1.6	No Data	2.1	2.3
3	FS Road 9365	7.2	6.3	0.6	0.3	0.0	0.5	1.2	2.5	3.2	3.0	2.4
4	FS Road 8516	25.3	20.7	1.5	1.5	1.2	2.2	3.4	5.6	4.7	6.4	10.4
5	FS Road 8554	5.6	6.5	1.1	0.4	0.2	0.5	0.6	2.8	7.1	7.5	6.4
6	"Iron Mine" Road	4.6 *	4.1	1.3	0.8	0.8	1.0	0.9	3.1	2.2	6.5	4.7

ADT = Average Daily Traffic. Includes travel in both directions.
FS = Forest Service
* = Early data for traffic counter 6 for period 10/15/93-11/1/93

Time gaps indicate data lost due to battery failure.

See Attachment 1 for additional information.

Route Management System (RMS)
Road Log Report

ROUTE: 8719- SYS: FDR NAME: ELKHORN CEMETARY FOREST: 09
BEGIN MP: 0 BEG TERMINI: RD 258 RESOURCE: RECREA
LENGTH: .26 END TERMINI: SEC 14 TRS: T0060N R0030W S140
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: C CURRENT LEVEL: 2 PLANNED: 2
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 12 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED: 5
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8719- FDR

USFS Road 8546 - Traffic Counter 2

USFS Road 8546 (Queen Gulch Road) originates from County Road 258 (Elkhorn Road) approximately one and one-half miles south of the Elkhorn townsite (Figure 2). The road is 10 feet wide, with a natural material surface, and is classified by the USFS as a local road (singular purpose). The road is approximately 2.6 miles in length. The USFS is responsible for maintenance. The road is not maintained during winter months (see Attachment 3).

The terminus of USFS Road 8546 is USFS Road 8554 west of Radersburg Pass. From County Road 258 (Elkhorn Road), USFS Road 8546 provides a seasonal route for access to USFS Road 8554 (Radersburg Pass), and USFS Road 8578 (Leslie Lake trailhead), while by-passing the Elkhorn townsite. USFS Road 9452, a 1.03 mile road accessing the South Fork Queens Gulch, originates from USFS Road 8546 a short distance from County Road 258.

The average daily traffic (ADT) recorded at traffic counter 2, located on USFS Road 8546 (Queen Gulch), was 6.5 for the period October 7 through November 30, 1993, 0.6 for the period December 1, 1993 to March 3, 1994, and 1.7 for the period March 4 through August 31, 1994. The period of maximum ADT (15) occurred during the opening weekend of general hunting season (October 23-24) (see Table 4 and Attachment 1). Snowmobile use is believed to constitute the majority of traffic on USFS Road 8546 for the period from mid-December through early March based on field observations.

USFS Road 9365 - Traffic Counter 3

USFS Road 9365 (Turnley Creek/Ninety Cent Gulch Road) originates from County Road 258 (Elkhorn Road) approximately one and one-quarter miles south of the Elkhorn townsite. The road is 12 feet wide, with a natural material surface, and is classified by the USFS as a local road (singular purpose). The road is approximately 1.66 miles in length, and terminates in Seven Up Gulch. The USFS is responsible for maintenance. The road is not maintained during winter months (see Attachment 3).

USFS Road 9365 provides access from County Road 258 (Elkhorn Road) to USFS trailhead #73 (trail west to Rawhide Creek drainage and USFS Road 8555), USFS trailhead #74 (trail

Route Management System (RMS)
Road Log Report

ROUTE: 9452- SYS: FDR NAME: SOUTH FORK QUEENS FOREST: 09
BEGIN MP: 0 BEG TERMINI: 8545 RESOURCE: RECREA
LENGTH: 1.03 END TERMINI: CAMP TRS: T0060N R0030W S230
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

9452- FDR

southwest to McCarty Creek and USFS Road 8523). USFS Road 9365 also provides access to USFS Road 8516 (Moreau Mine Road) up the Sourdough Creek drainage, which loops back to County Road 258 at the Elkhorn townsite (Note: portions of USFS Road 8516 are currently closed to public entry to protect mineral exploration activities).

The average daily traffic (ADT) at traffic counter 3, located on USFS Road 9365, was 6.8 for the autumn period of October 7 through November 30, 1993, 0.3 for the winter period of December 1, 1993 to March 3, 1994, and 2.2 for the period March 4 through August 31, 1994. A maximum ADT of 13 was recorded during the weekend of October 30 through November 1, 1993 (see Table 4 and Attachment 1). The majority of winter period use on USFS Road 9365 was due to snowmobile and off-road vehicle use based on observations made in the field.

USFS Road 8516 - Traffic Counter 4

USFS Road 8516 (Moreau Mine Road) originates from County Road 258 (Elkhorn Road) near the southern portion of the Elkhorn townsite. The road is approximately 2.6 miles in length, and provides access to USFS Road 9365 via the Sourdough Creek drainage. The road is 10 feet wide, with a natural material surface, and is classified by the USFS as a local road (singular purpose). The USFS is responsible for maintenance. With the exception of some winter maintenance by Santa Fe for access to facilities, the road is not maintained during winter months (see Attachment 3).

Portions of USFS Road 8516 are currently gated, and public access prohibited to protect mineral exploration activities. The Santa Fe mineral exploration office and facilities are located along USFS Road 8516 a short distance from County Road 258 (Elkhorn Road).

Traffic counter 4 is located on USFS Road 8516 approximately 200 west of County Road 258 (Elkhorn Road), and between the Santa Fe field office and County Road 258. Traffic counter 4 recorded an average daily traffic (ADT) of 23.2 from October 9 through November 30, 1993, 1.4 for the period of December 1, 1993 through March 3, 1994, and 5.3 for the period March 4 through August 31, 1994. Unlike the other monitored roads, the maximum ADT

Route Management System (RMS)
Road Log Report

ROUTE: 8546- SYS: FDR NAME: QUEEN GULCH FOREST: 09
BEGIN MP: 0 BEG TERMINI: ELKHORN RESOURCE: MINERL
LENGTH: 2.61 END TERMINI: SEC 13 TRS: T0060N R0030W S260
QUAD NAME: CLANCY SW QUAD INDEX: 46111331

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8546- FDR

(33) was recorded during the period of October 16 through October 21, 1993, prior to the opening of the general big game hunting season. This was because public vehicle access to roaded areas beyond the Santa Fe field office was restricted to protect Santa Fe mineral exploration activities. The location of traffic counter 4 was selected to gauge the amount of traffic contributed to County Road 258 (Elkhorn Road) by Santa Fe-related mineral activities. Based upon a comparison of ADT's recorded at traffic counter 1 on the main access road (County Road 258) and traffic counter 4, the contribution to total traffic recorded at County Road 258 by seasonal Santa Fe mineral activities was approximately 45% during the autumn period, 12% during the winter period, and 14% during the spring-summer period. The higher percentage contribution in autumn is due to exploration activities conducted by Santa Fe at that time. Because it is not known to what degree Santa Fe-related traffic passed traffic counter 4 without passing traffic counter 1 on County Road 258 during these periods, the percentage contributions of Santa Fe-related traffic are estimates only. However, because traffic counter 4 is located before all Santa Fe facilities and areas of exploration activity, the volume of traffic recorded at traffic counter 4 without being recorded at traffic counter 1 is believed to be small (see Table 4 and Attachment 1).

USFS Road 8554 - Traffic Counter 5

USFS Road 8554 (Radersburg Pass Road) originates in the Elkhorn townsite along County Road 258 (Elkhorn Road), and extends a distance of approximately 6.16 miles eastward to the DNF and Helena National Forest (HNF) boundary, where it accesses other HNF roads. The road is 10 feet wide, with a natural material surface, and is classified by the USFS as a local road (singular purpose). The USFS is responsible for maintenance. The road is not maintained during winter months (see Attachment 3).

At the Elkhorn townsite, USFS Road 8554 can also be accessed from USFS Road 8549, which is approximately 0.32 miles in length, and originates from County Road 258 (Elkhorn Road) at the northern end of the Elkhorn townsite. The Elkhorn Cemetery is accessed from USFS Road 8554 by USFS Road 8719 (0.26 mile length) a short distance south of the intersection of USFS Road 8554 and USFS Road 8549. Further east along USFS Road 8549,

Route Management System (RMS)
Road Log Report

ROUTE: 517- SYS: FDR NAME: DRY CREEK FOREST: 09
BEGIN MP: 0 BEG TERMINI: CO RD RESOURCE: TIMBER
LENGTH: 11.07 END TERMINI: RD 258 SEC 28 TRS: T0060N R0020W S200
QUAD NAME: DEVILS FENCE NW QUAD INDEX: 46111332

At the beginning of the Route:
DISTRICT: 02 FUNCTION: C JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 4 PLANNED: 4
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: .14 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED: 10
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

517- FDR	MP: 5.5	Len: 5.57	Maint Resp: CU	Current: 2	Planned: 2
	MP: 5.5	Len: 5.57	Template: D		

USFS Road 8546 (Queen Gulch Road) provides a loop connection back to County Road 258 (Elkhorn Road) south of the Elkhorn townsite (see Attachment 3).

At the intersection of USFS Road 8549 (Queen Gulch Road) with USFS 8554, access is provided to Deadman Spring via USFS Road 9366 (Deadman Spring/Tramway Road). The Deadman Spring/Tramway Road is 10 feet wide, with a natural material surface, and approximately 4.11 miles in length. The road is classified by the USFS as a local road (single purpose) and the USFS is responsible for maintenance of the road, which is not maintained during winter months (see Attachment 3).

From Deadman Spring, USFS Road 8579 (Lupine Spring Road) provides a loop back to USFS 8554. The Lupine Spring Road is 10 feet wide, has a natural material surface, and is approximately 2.19 miles in length. The road is classified by the USFS as a local road (single purpose), and the USFS has maintenance responsibility for the road, which is not maintained during winter months (see Attachment 3).

Beyond Radersburg Pass on USFS Road 8554, access is provided to County Road 517. Travel on County Road 517 provides a route down the Dry Creek drainage to the intersection of County Road 258 (Elkhorn Road) and Sloan's Lane, where nearby access to State Route 69 is possible. Additional discussion concerning County Road 517 is in Section 5.2.2.

Traffic counter 5, located on USFS Road 8554 approximately 200 feet east of the Elkhorn Cemetery Road (USFS 8719), recorded an ADT of 6.2 from October 9 through November 30, 1993, 0.6 during the period of December 1, 1993 through March 3, 1994, and 4.1 from March 4 through August 31, 1994. A maximum ADT of 13 was recorded on the opening weekend of the general big game hunting season (October 23-24) (see Table 4 and Attachment 1). Based on field observations, vehicle use of USFS Road 8554 during the winter period was due to snowmobile and off-road vehicle use only.

Route Management System (RMS)
Road Log Report

ROUTE: 8578- SYS: FDR NAME: FOREST: 09
BEGIN MP: 0 BEG TERMINI: ELKHORN MINE RESOURCE: RANGE
LENGTH: 3.9 END TERMINI: SEC 8 TRS: T0060N R0030W S130
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8578- FDR

County Road 258 North of Elkhorn - Traffic Counter 6

Beyond the Elkhorn townsite, County Road 258 is locally referred to as the "Iron Mine Road" and extends to an area of previous mining activity on the northwest side of Elkhorn Peak. Section 5.2.1 provides additional discussion concerning the characteristics of County Road 258.

Traffic counter 6 is located on County Road 258 (Elkhorn road) approximately one-half mile north of the Elkhorn townsite. This location recorded an average daily traffic (ADT) of 4.6 from October 16 through November 30, 1993, 1.0 for the period of December 1, 1993 through March 3, 1994, and 3.0 from March 4 through August 31, 1994. A maximum ADT of 8 vehicles was recorded during the opening weekend of general big game hunting season (October 23-24) (see Table 4 and Attachment 1). Snowmobiles and off-road vehicles are believed to account for all winter period vehicle use on the Iron Mine Road based on field observations.

Other USFS Roads

USFS Road 8539 (Tacoma Gulch Road) originates from County Road 258 (Elkhorn Road) a short distance south of the DNF boundary, and provides access to Tacoma Gulch. The lower portion of the corridor for the existing overhead powerline that serves the Elkhorn townsite is located in Tacoma Gulch. The road is 10 feet wide, with a natural surface, and is classified as a local road (singular purpose). The road is approximately 1.95 miles in length, and terminates in Tacoma Park. The USFS is responsible for maintenance. The road is not maintained during winter months. No road use information is available for USFS Road 8539.

From USFS Road 8539, access is provided to USFS Roads 8540 and 8586. The USFS has maintenance responsibility for these roads, and they are not maintained during winter months. These roads are both classified as local roads (singular purpose) by the USFS, and have lengths of 0.77 and 0.8 miles, respectively. Both roads are 10 feet wide, with natural surfaces. No road use information is available for either road.

Route Management System (RMS)
Road Log Report

ROUTE: 1581- SYS: FDR NAME: TURMAN CREEK FOREST: 09
BEGIN MP: 0 BEG TERMINI: 517 RESOURCE: TIMBER
LENGTH: .35 END TERMINI: SEC 16 TRS: T0060N R0020W S200
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: CU CURRENT LEVEL: 2 PLANNED: 2
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 12 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED: 5
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

1581- FDR

Attachment 3 contains USFS Road Log Report information for the previously discussed roads, as well as other USFS roads within the general vicinity of the Elkhorn Project. With the exception of the 1993-1994 Santa Fe traffic counter information for the selected roads, no additional road use information is available. Figure 2 shows the location of USFS roads in relation to the Elkhorn Project area.

5.2 JEFFERSON COUNTY ROADS

Roads administered by Jefferson County in the vicinity of the Elkhorn Project are primarily located between the southern boundary of Deerlodge National Forest (DNF) and State Route 69. With the exception of vehicle counter information gathered by the DNF for County Road 258 (Elkhorn Road) near the forest boundary in 1978 and 1979 (Attachment 4), no previous road use information is available for roads administered by Jefferson County in the vicinity of the Elkhorn Project. County Road 258 (Elkhorn Road) provides the main access to the Elkhorn Project area and the Elkhorn townsite via an un-numbered road known locally as "Sloan's Lane" (Figure 2). Access to Sloan's Lane is typically gained from State Route 69 south of Boulder, Montana, although Sloan's Lane can also be accessed closer to Boulder. The jurisdictional status of Sloan's Lane is uncertain, as is the status of "Quinn's Lane", another un-numbered informally named local road extending southeastward from near the junction of County Road 258 and Sloan's Lane. The jurisdictional status of other local roads in the vicinity of the Elkhorn Project is uncertain as well. Jefferson County is currently inventorying all roads, determining historic use and ownership status, and assigning road numbers to roads without numbers. This process is anticipated to be completed in 1995. (Pers. Comm., Paul Ruffato, Jefferson County Commissioner, January 5, 1994)

5.2.1 County Road 258 - Elkhorn Road

County Road 258 (Elkhorn Road) extends approximately 10.78 road miles from Sloan's Lane to the Elkhorn townsite within the DNF and beyond, ending above the townsite on the northwest side of Elkhorn Peak at an area of previous mining activity (Iron Mine). Beyond the Elkhorn townsite, the road is known locally as the "Iron Mine Road". The DNF Road Log Report for County Road 258 (Attachment 3) notes USFS jurisdiction beginning at the forest boundary (milepost 4.17), while Jefferson County maintenance responsibility extends

Route Management System (RMS)
Road Log Report

ROUTE: 9366-	SYS: FDR	NAME: DEAD MAN SPRING	FOREST: 09
BEGIN MP: 0	BEG TERMINI: RD 258		RESOURCE: TIMBER
LENGTH: 4.11	END TERMINI: SEC 36		TRS: T0060N R0030W S130
QUAD NAME: CLANCY SW		QUAD INDEX: 46111323	

At the beginning of the Route:

DISTRICT: 02	FUNCTION: L	JURISDICTION: FS	SURFACE: NAT
COUNTY: 043	MAINT RESP: FS	CURRENT LEVEL: 2	PLANNED: 2
STATE: 30	TEMPLATE: H	TRAVEL MGMT: 1	TRAVEL PLAN:
WIDTH: 12	SERVICE LIFE: C	SERVICE LEVEL:	DESIGN SPEED: 5
DESIGN TRAFFIC -	Primary: Secondary:		

CHANGES

9366- FDR

to the Elkhorn townsite (milepost 8.17). Beyond the Elkhorn townsite, road maintenance responsibility is noted as USFS. County Road 258 is classified by the DNF as an arterial road to the Elkhorn townsite, and as a local road beyond the townsite. As an arterial road, the road is considered to provide a major access route to and/or through the DNF involving use that is not necessarily restricted to forest-related activities (i.e. visiting the historic Elkhorn townsite).

As the main year-long access to the Elkhorn townsite, County Road 258 is used by visitors to the historic townsite, as well as for access to other historic mining areas nearby. In addition, the road provides connecting access to other USFS roads in the area used for access to other recreational areas and USFS trailheads. County Road 258 is also used by Santa Fe personnel for travel to the Santa Fe field office near Elkhorn, and for the transport of mineral exploration-related equipment to the Elkhorn area. Vehicle counter information obtained by Santa Fe for County Road 258 at the DNF boundary (traffic counter 1) and above the Elkhorn townsite (traffic counter 6) during autumn 1993 through summer 1994 is shown in Table 4 and Attachment 1, and discussed in Section 5.1.3.

The DNF Road Log Report characterizes the Elkhorn Road as 15 feet wide at its beginning, with an aggregate surface, narrowing to 14 feet wide with a natural surface from the forest boundary to the Elkhorn townsite, and narrowing further to 12 feet wide beyond the townsite. The road is plowed and maintained by the county to the Elkhorn townsite during the winter.

5.2.2 Other County Roads

Other Jefferson County roads providing local access to the Elkhorn Mountains in the vicinity of the Elkhorn Project include County Road 517 and County Road 441 (Figure 2). County Road 517 is approximately 11.07 miles in length and begins at the junction of Sloan's Lane and County Road 258. The road provides access to the Dry Creek drainage, east of the Elkhorn Project area. The road intersects with USFS Road 8554 at the headwaters of the West Fork of Dry Creek, a short distance east of Radersburg Pass. County Road 517 can be seasonally used for pass-through travel from Sloan's Lane to Radersburg, via USFS Road 8554. This route by-passes County Road 258 and the Elkhorn townsite. The USFS Road

Route Management System (RMS)
Road Log Report

ROUTE: 5022- SYS: FDR NAME: MUDDY SPRINGS FOREST: 09
BEGIN MP: 0 BEG TERMINI: RD 517.1 RESOURCE: TIMBER
LENGTH: .8 END TERMINI: SEC 19 TRS: T0060N R0020W S200
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED: 2
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 12 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED: 5
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

5022- FDR

Log Report for County Road 517 notes that the road width is 14 feet with a natural material surface, and is classified as a collector road serving one or more local roads. The report also notes that Jefferson County jurisdiction and maintenance responsibility ends once the road enters the DNF. No road use information is available for County Road 517 (see Attachment 1).

County Road 441 provides access to DNF lands within the Muskrat Creek and Rawhide Creek drainages located west of the Elkhorn Project area. The road provides access to the Muskrat Creek USFS trailhead #72, or the Rawhide Creek USFS trailhead #73 (via USFS Road 8555), with no pass-through travel possible. No road use information is available for County Road 441.

Route Management System (RMS)
Road Log Report

ROUTE: 8554- SYS: FDR NAME: RADARSBURG PASS FOREST: 09
BEGIN MP: 0 BEG TERMINI: ELKHORN FS BDRY RESOURCE: WILDLF
LENGTH: 6.16 END TERMINI: TRS: T0060N R0030W S140
QUAD NAME: CLANCY SW QUAD INDEX: 46111331

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8554- FDR

6.0 OTHER TRANSPORTATION

6.1 AIRPORTS

A small airfield is located a short distance south of Boulder, Montana, adjacent to State Route 69. The airfield has a natural turf surface with a runway length of 3,675 feet and width of 75 feet. The airfield is unattended, with no snow removal. The nearest airports providing major commercial airline service are located in Helena and Butte, Montana, approximately 30 miles to the north, and 35 miles to the southwest, respectively. (Pers. Comm., Federal Aviation Administration, Great Falls, Montana, 3/4/94)

6.2 BUS AND RAILROADS

Passenger bus service for Boulder, Montana, is provided by the Intermountain Transportation Company. Service is offered to Helena and Butte, Montana, where connections to other destinations are possible. Bus travel from Boulder to Whitehall, Montana, is possible only through Butte, Montana.

No passenger or freight rail service is available in Boulder, Montana. The nearest passenger rail service is located in Shelby, Montana (194 miles north), and the nearest rail freight service is available in Helena (30 miles north) and Butte (35 miles south), Montana.

Route Management System (RMS)
Road Log Report

ROUTE: 8579- SYS: FDR NAME: LUPINE SPRING FOREST: 09
BEGIN MP: 0 BEG TERMINI: DEADMAN SPNG RESOURCE: RANGE
LENGTH: 2.19 END TERMINI: SEC 24 TRS: T0060N R0020W S190
QUAD NAME: CLANCY SW QUAD INDEX: 46111323

At the beginning of the Route:
DISTRICT: 02 FUNCTION: L JURISDICTION: FS SURFACE: NAT
COUNTY: 043 MAINT RESP: FS CURRENT LEVEL: 2 PLANNED:
STATE: 30 TEMPLATE: TRAVEL MGMT: 1 TRAVEL PLAN:
WIDTH: 10 SERVICE LIFE: C SERVICE LEVEL: DESIGN SPEED:
DESIGN TRAFFIC - Primary: Secondary:

CHANGES

8579- FDR

7.0 REFERENCES

Deerlodge National Forest. 1987. Final Forest Plan, Deerlodge National Forest, MT.

Deerlodge National Forest and Helena National Forest. 1989. Elkhorn Integrated Resource Management Analysis. Helena and Deerlodge National Forests. 104 pp.

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Helena National Forest. 1993. Elkhorn Landscape Analysis Documentation; An Integrated Resource Analysis with Emphasis on Ecosystem Management; To Be Used Within the Elkhorn Cooperative Management Area, Elkhorn Mountains, Montana. 216 pp.

USDA-FS, 1993. Equipment Development and Test Report No. 7700-9. **Inductance Loops - Their Design, Installation, and Maintenance for Road Traffic Surveillance.**

List of Personal Communication Contacts:

Deerlodge National Forest

Ron Roginske, Recreation Specialist, Whitehall Ranger District, Whitehall, Montana

Earl Williams, Highway Engineer, Supervisors Office, Butte, Montana

Montana Department of Transportation

Dennis Holtz, Acting Supervisor, Traffic Operations, Helena, Montana

David S. Johnson, P.E., Preconstruction Engineer, Helena, Montana

John Wright, Pavement Management Supervisor, Helena, Montana

ATTACHMENT 3

USFS ROUTE MANAGEMENT SYSTEM
ROAD LOG REPORTS, SELECTED ROADS
DEERLODGE NATIONAL FOREST
JEFFERSON COUNTY, MONTANA

List of Personal Communication Contacts (Continued):

Jefferson County

Paul Ruffato, Jefferson County Commissioner, Boulder, Montana

Federal Aviation Administration, Great Falls, Montana

Federal Aviation Administration, Great Falls, Montana, 3/4/94

Site: 000300110422 Id: 000069990180 Cid: 01 Fac: 300 Int: 60 Min.
Start: Mon - May 10, 1993 at 11:00 End: Thu - May 13, 1993 at 05:04
City/Town: County: JEFFERSON
Location: MT 69,11.5 MILES NORTH OF FAS 359 MP 18 File: D0510013.PRN
Lnl-South

Station Data Summary

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Grand Totals	5	374	151	2	14	3	1	11	188	2	4	0	28	0	60	843
Percentages	0.59	44.37	17.91	0.24	1.66	0.36	0.12	1.30	22.30	0.24	0.47	0.00	3.32	0.00	7.12	

Length	1-20	21-35	36-47	48-75	76-95	96-106	Total
Grand Totals	548	31	15	221	28	0	843
Percentages	65.01	3.68	1.78	26.22	3.32	0.00	

Lane	1	Total
Grand Totals	843	843
Percentages	100.00	

AM/PM Peak Hour Totals

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
AM Hour 10-11	0	10	6	1	0	0	0	0	1	0	0	0	2	0	1	21
Percentages	0.00	2.67	3.97	50.00	0.00	0.00	0.00	0.00	0.53	0.00	0.00	0.00	7.14	0.00	1.67	2.49
PM Hour 16-17	0	16	5	0	1	0	0	0	7	0	1	0	1	0	2	33
Percentages	0.00	4.28	3.31	0.00	7.14	0.00	0.00	0.00	3.72	0.00	25.00	0.00	3.57	0.00	3.33	3.91

6 AMT - 6 Axle, Multi Trailer
ST - Single Trailer
SU - Single Unit
2A 4T - 2 Axle, 4 Tire

ATTACHMENTS

1993

MONTANA DEPARTMENT OF TRANSPORTATION PRECONSTRUCTION BUREAU
TRAFFIC OPERATIONS SECTION COUNT/CLASS/SPEED REPORTS
05-13-1993 Volume by Type by Length by Lane Report - D0510012.PRN 12:25 Pg 1

Sta: 000100110422 Id: 000069990180 CId: 01 Fat: 200 Int: 60 Min.
Start: Mon - May 10, 1993 at 11:00 End: Thu - May 13, 1993 at 05:03
City/Town: County: JEFFERSON
Location: MT 69,11.5 MILES NORTH OF FAS 339 MP18 File: D0510012.PRN
Lni-North

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Grand Totals	5	374	154	1	16	7	0	15	116	7	1	1	18	0	37	752
Percentages	0.66	49.73	20.48	0.13	2.13	0.93	0.00	1.99	15.43	0.93	0.13	0.13	2.39	0.00	4.92	

Length	1-20	21-35	36-47	48-75	76-95	96-106	Total
Grand Totals	542	35	14	134	27	0	752
Percentages	72.07	4.65	1.86	17.82	3.59	0.00	

Lane	1	Total
Grand Totals	752	752
Percentages	100.00	

Am/Pm Peak Hour Totals

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Am Hour 11-12	1	8	11	0	0	1	0	0	2	0	0	0	1	0	2	26
Percentages	20.00	2.14	7.14	0.00	0.00	14.29	0.00	0.00	1.72	0.00	0.00	0.00	5.56	0.00	5.41	3.46
Pm Hour 16-17	0	17	4	0	2	0	0	1	4	0	0	0	0	0	1	29
Percentages	0.00	4.55	2.60	0.00	12.50	0.00	0.00	6.67	3.45	0.00	0.00	0.00	0.00	0.00	2.70	3.86

Montana Department of Transportation
2701 Prospect Avenue
PO Box 201001
Helena MT 59620-1001

Marc Racicot, Governor

September 27, 1993

Hydrometrics, Inc.
2727 Airport Road
Helena, MT 59601
Attention: Robert C. Anderson

Subject: Montana 69, Whitehall to Boulder

The Montana Department of Transportation must comply with Title 23 USC, Section 409, which may prohibit the distribution of the enclosed material. Further distribution of this material should be made by the Preconstruction Bureau office only. Any other requests for this information should be directed to the Preconstruction Engineer.

As per your letter dated September 17, 1993, we are able to provide the following information. Accident data is from Whitehall city limits to Boulder city limits for the time period of 7-1-83 to 6-30-93 (10 years).

	All Vehicles	Large Trucks
Accident Rate	1.44	1.53
Statewide Average	1.47	1.35
High Average	2.84	3.62
Severity Rate	1.53	1.61
Statewide Average	1.54	1.52
High Average	1.80	1.77
No. of Accidents	160	37
No. of Fatal Accidents	6	2
No. of Injury Accidents	56	13
No. of Property Damage Only Accidents	98	22

If you require any additional information, please contact Hank Butzlaff at 444-6113 or me at 444-6244.

David S. Johnson, P.E.
Preconstruction Engineer

DSJ:WN:D:PRE:36.yb

cc: David S. Johnson, P.E.
Preconstruction Engineer
Carl S. Peil, P.E.
Assistant Preconstruction Engineer
W.H. Butzlaff, Supervisor
Safety Management Section

ATTACHMENT 1

TRAFFIC COUNTER INSTALLATION AND MONITORING DATA
SANTA FE PACIFIC GOLD CORPORATION
JEFFERSON COUNTY, MONTANA

ATTACHMENT 2

MONTANA DEPARTMENT OF TRANSPORTATION
ACCIDENT AND VEHICLE COUNT INFORMATION
STATE ROUTE 69,
JEFFERSON COUNTY, MONTANA

ATTACHMENT 1

TRAFFIC COUNTER INSTALLATION AND MONITORING DATA
SANTA FE PACIFIC GOLD CORPORATION
JEFFERSON COUNTY, MONTANA

1.0 METHODS AND EQUIPMENT USED

A total of six inductive loop traffic counters were installed by Santa Fe Pacific Gold Corporation (Santa Fe) at selected locations on roads in the vicinity of Elkhorn, Montana. The traffic counters were installed to gather supplemental baseline road use information for the roads and transportation baseline investigation. Traffic counters were provided to Santa Fe by the Deerlodge National Forest (DNF) and traffic counter locations were selected in consultation with the DNF. Procedures used by Santa Fe for the design and installation of the traffic counters closely followed procedures contained in USDA Forest Service Equipment Development and Test Report No. 7700-9: **Inductive Loops, Their Design, Installation, and Maintenance for Road Traffic Surveillance** (USDA-FS, 1983).

Each inductive loop was comprised of 14 gauge copper stranded wire that was placed in a protective rubber hose. The loops located on Queen Gulch Road (USFS Road 8546) at counter location #2, Turnley Meadows Road (USFS Road 9365) at counter location #3, Mine Access Road at counter location #4, Cemetery Road (USFS Road 8554) at counter location #5, and the Elkhorn Road (County Road 258) at location #6 one-half mile north of the Elkhorn townsite, all had dimensions of 8 feet by 6 feet. Four turns of wire in each loop was used to produce approximately 154 Microhenries of inductance. This falls within the suggested 100 to 300 Microhenrie range, and allowed the detection of snowmobiles and ATVs. The inductance loop located on the Elkhorn Road (County Road 258) at counter location #1 had a dimension of 14 feet by 6 feet. Four turns of wire were also used in this loop to produce approximately 228 Microhenries of inductance. The loops were buried at a depth of four to six inches below each road surface. Counter boxes were located off the road, locked with chains, and hidden from passing traffic.

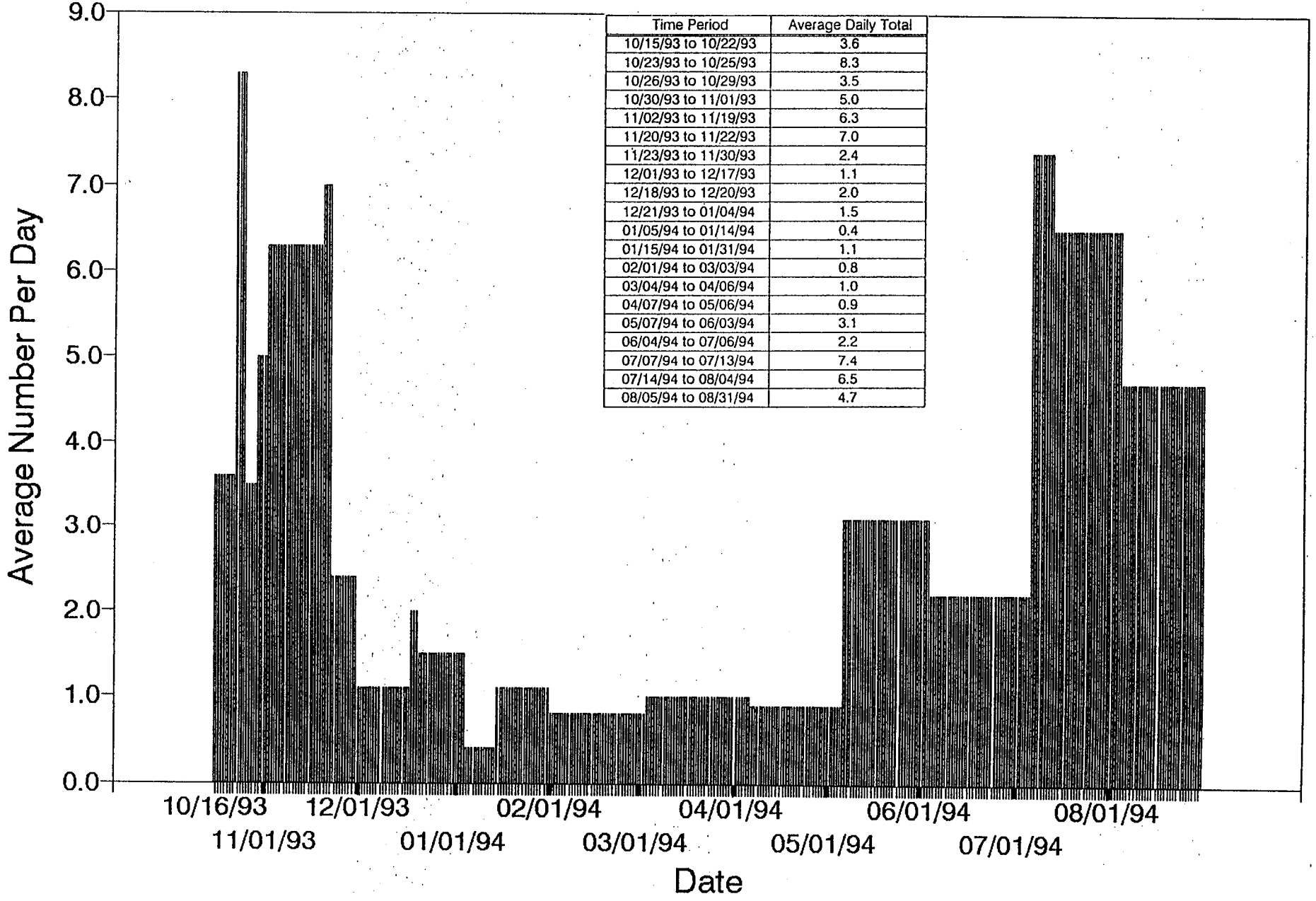
The attached graphs depict the average daily traffic (ADT) recorded at each traffic counter for the period from early October 1993 through August 1994. The ADT was calculated for the time periods between traffic counter readings. The graphs and inset tables illustrate the distribution of traffic use through the entire period of record.

For the period of October 1993 through December 1993, readings were taken a minimum of bi-monthly at each of the traffic counter locations. These readings were supplemented by occasional Friday through Monday readings to gauge weekend traffic. Monthly readings were taken at each traffic counter location beginning in January 1994. Table 3 and Figure 3 of the Roads and Transportation Baseline Report describe and show the locations of the six traffic counters.

2.0 REFERENCES

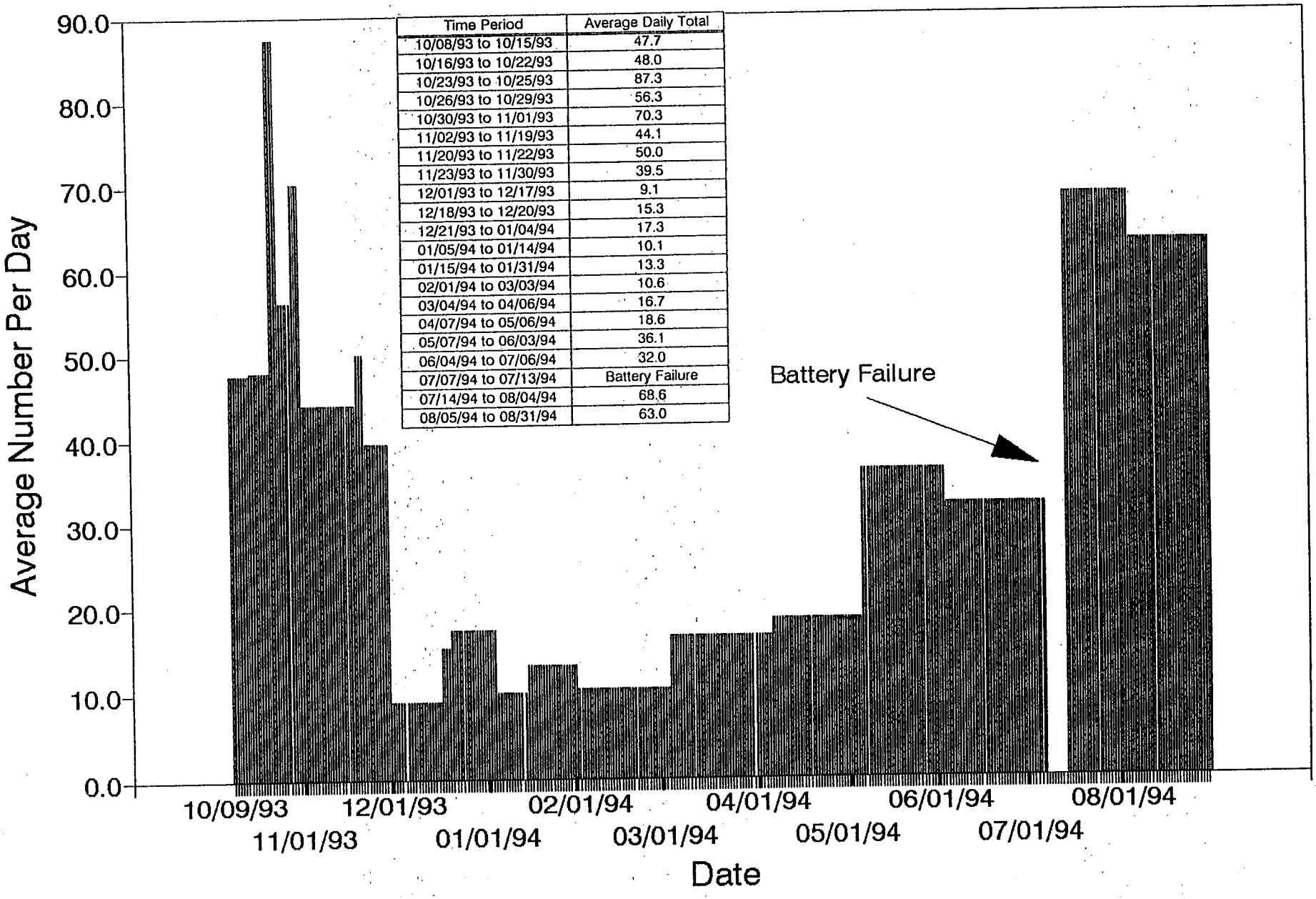
USDA-FS, 1993. Equipment Development and Test Report No. 7700-9. **Inductance Loops - Their Design, Installation, and Maintenance for Road Traffic Surveillance.**

Iron Mine Road
Traffic Counter No. 6



Time Period	Average Daily Total
10/15/93 to 10/22/93	3.6
10/23/93 to 10/25/93	8.3
10/26/93 to 10/29/93	3.5
10/30/93 to 11/01/93	5.0
11/02/93 to 11/19/93	6.3
11/20/93 to 11/22/93	7.0
11/23/93 to 11/30/93	2.4
12/01/93 to 12/17/93	1.1
12/18/93 to 12/20/93	2.0
12/21/93 to 01/04/94	1.5
01/05/94 to 01/14/94	0.4
01/15/94 to 01/31/94	1.1
02/01/94 to 03/03/94	0.8
03/04/94 to 04/06/94	1.0
04/07/94 to 05/06/94	0.9
05/07/94 to 06/03/94	3.1
06/04/94 to 07/06/94	2.2
07/07/94 to 07/13/94	7.4
07/14/94 to 08/04/94	6.5
08/05/94 to 08/31/94	4.7

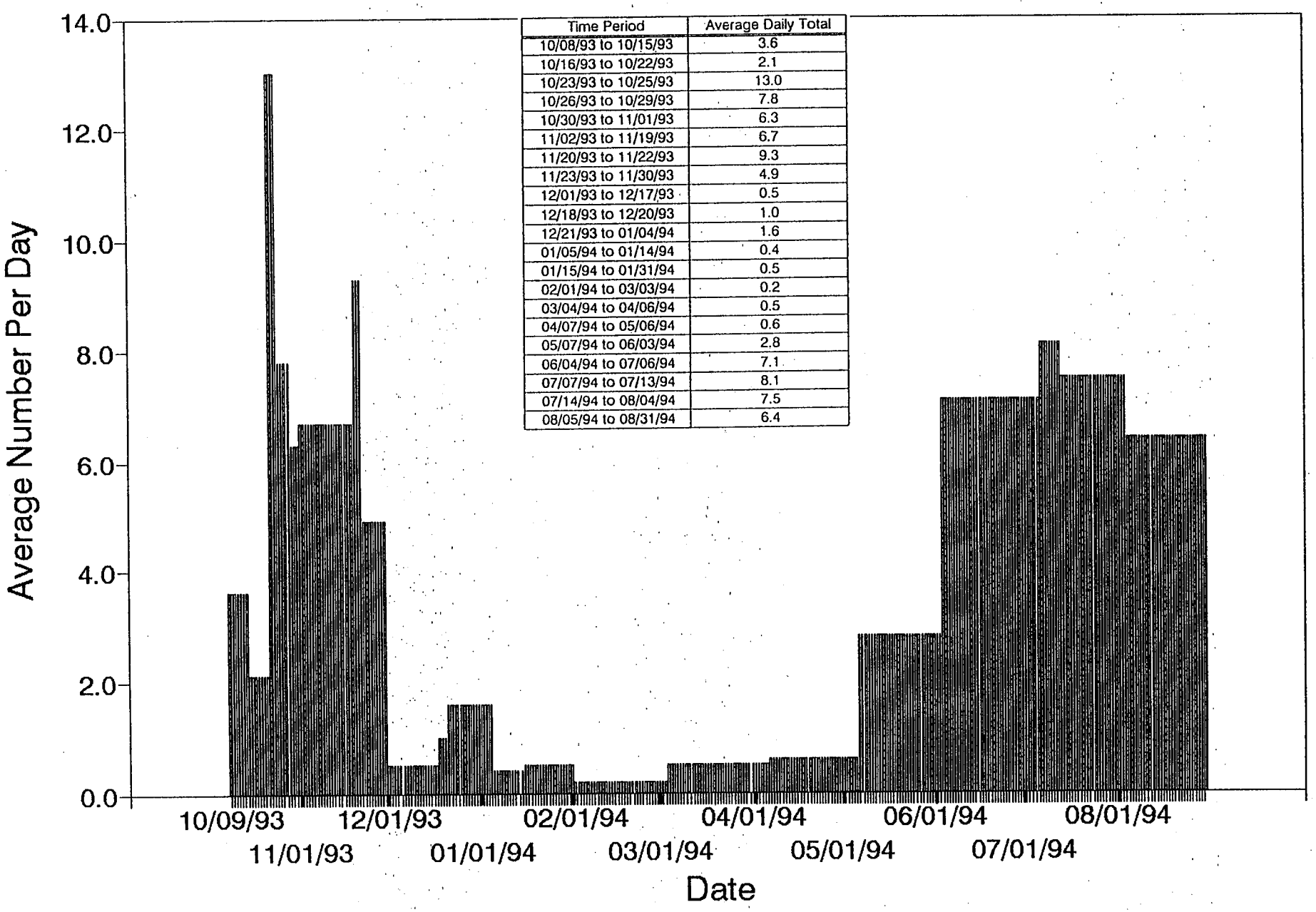
County Road 258
Traffic Counter No. 1



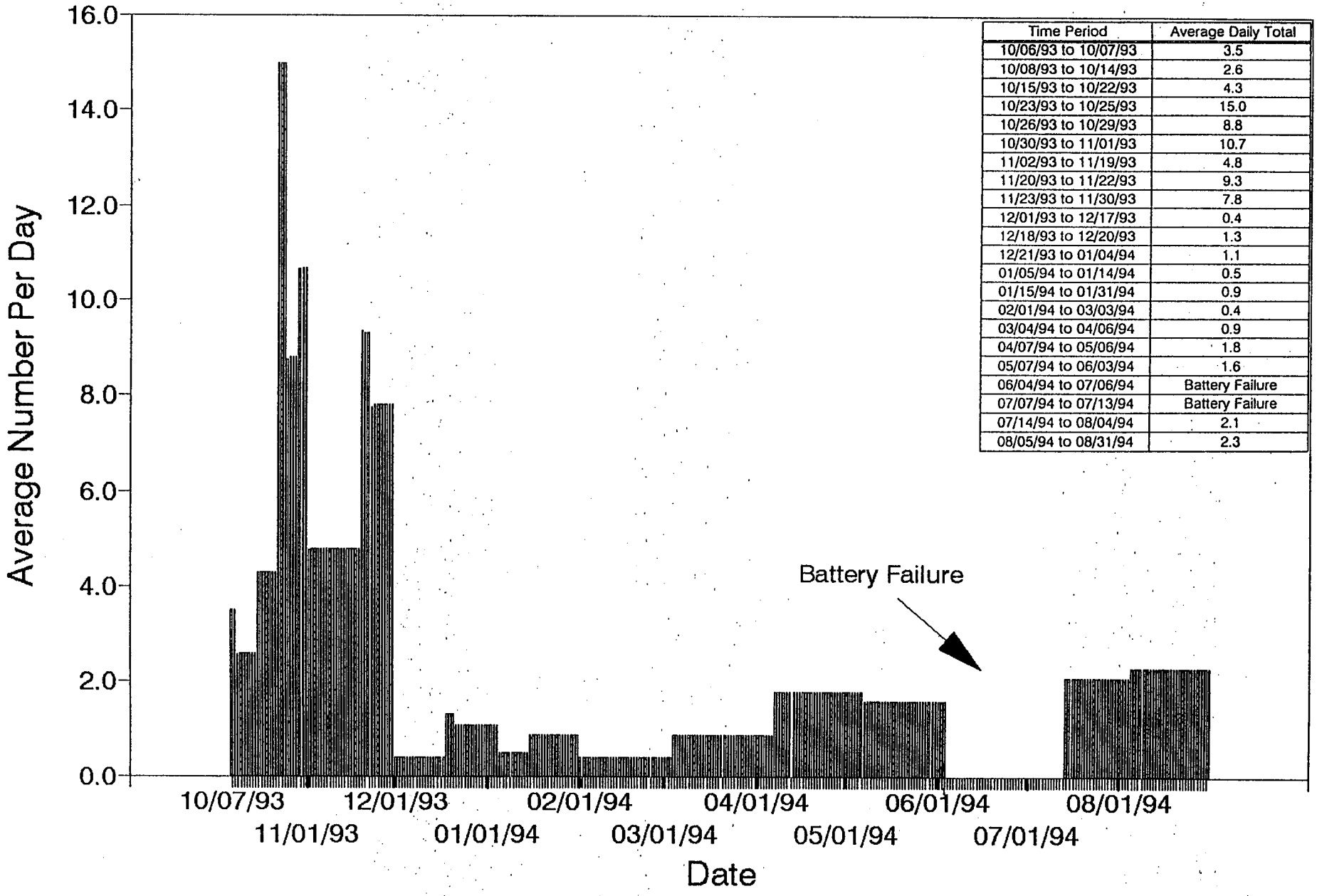
Time Period	Average Daily Total
10/08/93 to 10/15/93	47.7
10/16/93 to 10/22/93	48.0
10/23/93 to 10/25/93	87.3
10/26/93 to 10/29/93	56.3
10/30/93 to 11/01/93	70.3
11/02/93 to 11/19/93	44.1
11/20/93 to 11/22/93	50.0
11/23/93 to 11/30/93	39.5
12/01/93 to 12/17/93	9.1
12/18/93 to 12/20/93	15.3
12/21/93 to 01/04/94	17.3
01/05/94 to 01/14/94	10.1
01/15/94 to 01/31/94	13.3
02/01/94 to 03/03/94	10.6
03/04/94 to 04/06/94	16.7
04/07/94 to 05/06/94	18.6
05/07/94 to 06/03/94	36.1
06/04/94 to 07/06/94	32.0
07/07/94 to 07/13/94	Battery Failure
07/14/94 to 08/04/94	68.6
08/05/94 to 08/31/94	63.0

Cemetery Road
Traffic Counter No. 5

Time Period	Average Daily Total
10/08/93 to 10/15/93	3.6
10/16/93 to 10/22/93	2.1
10/23/93 to 10/25/93	13.0
10/26/93 to 10/29/93	7.8
10/30/93 to 11/01/93	6.3
11/02/93 to 11/19/93	6.7
11/20/93 to 11/22/93	9.3
11/23/93 to 11/30/93	4.9
12/01/93 to 12/17/93	0.5
12/18/93 to 12/20/93	1.0
12/21/93 to 01/04/94	1.6
01/05/94 to 01/14/94	0.4
01/15/94 to 01/31/94	0.5
02/01/94 to 03/03/94	0.2
03/04/94 to 04/06/94	0.5
04/07/94 to 05/06/94	0.6
05/07/94 to 06/03/94	2.8
06/04/94 to 07/06/94	7.1
07/07/94 to 07/13/94	8.1
07/14/94 to 08/04/94	7.5
08/05/94 to 08/31/94	6.4

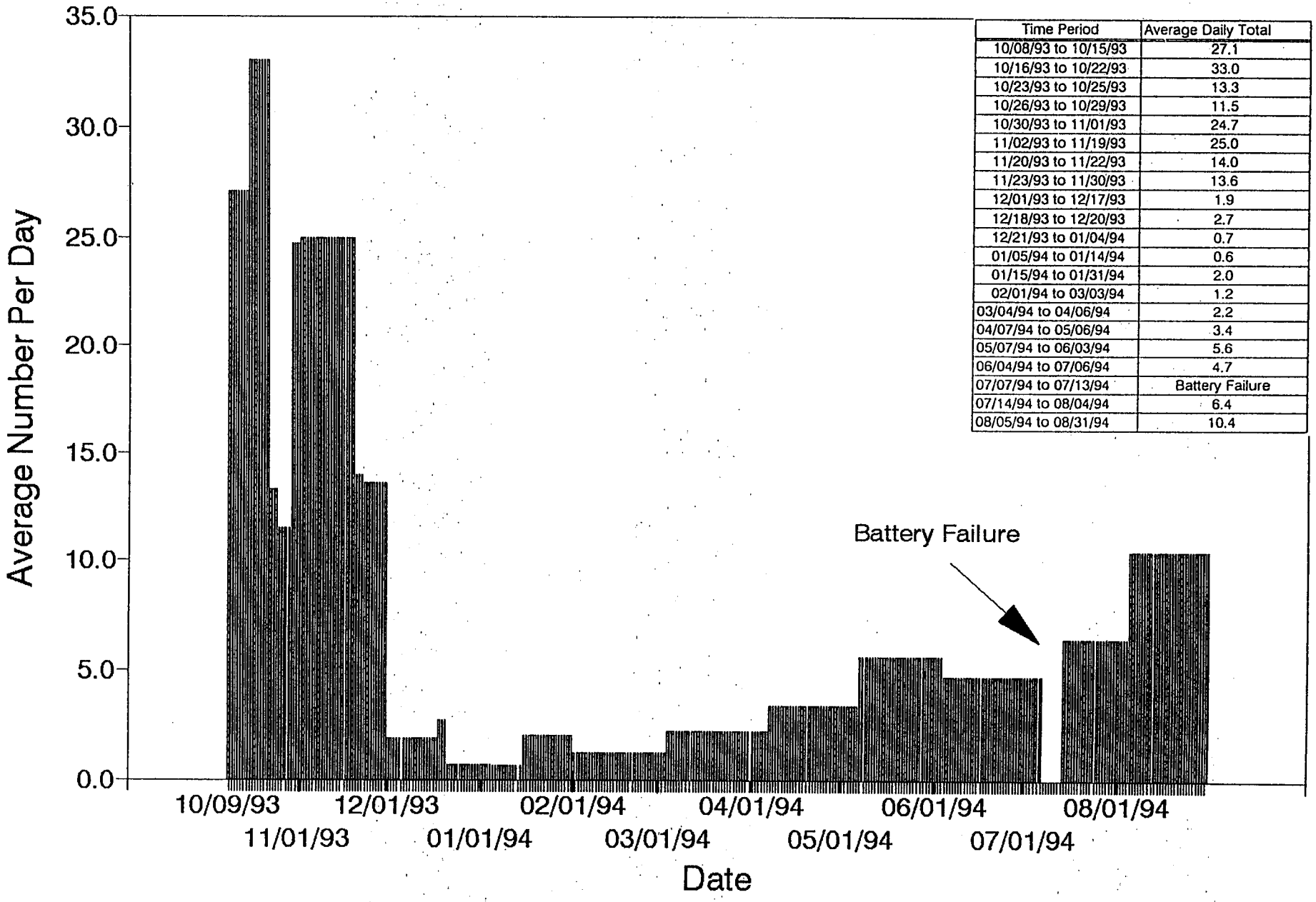


Queens Gulch Road
Traffic Counter No. 2



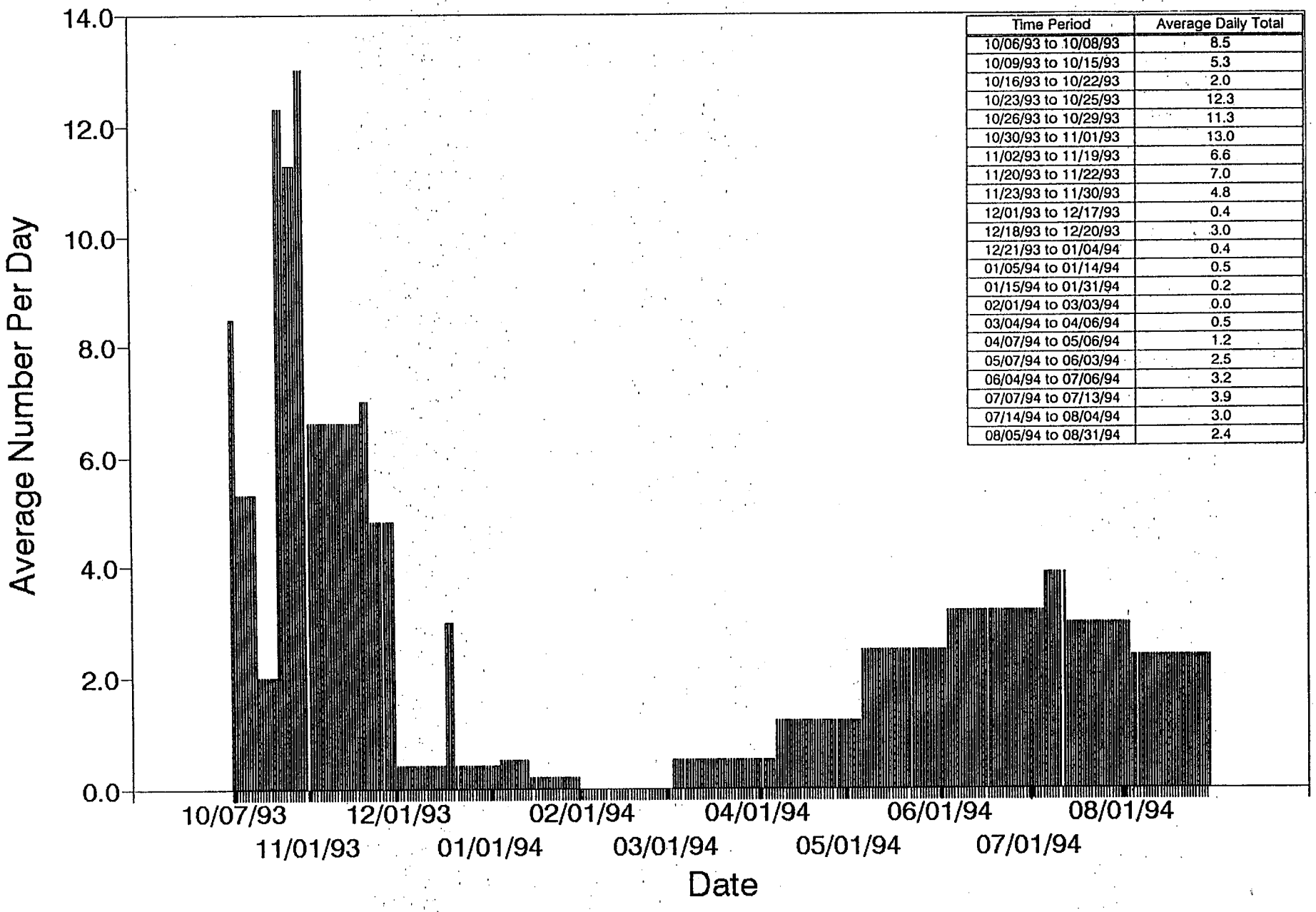
Time Period	Average Daily Total
10/06/93 to 10/07/93	3.5
10/08/93 to 10/14/93	2.6
10/15/93 to 10/22/93	4.3
10/23/93 to 10/25/93	15.0
10/26/93 to 10/29/93	8.8
10/30/93 to 11/01/93	10.7
11/02/93 to 11/19/93	4.8
11/20/93 to 11/22/93	9.3
11/23/93 to 11/30/93	7.8
12/01/93 to 12/17/93	0.4
12/18/93 to 12/20/93	1.3
12/21/93 to 01/04/94	1.1
01/05/94 to 01/14/94	0.5
01/15/94 to 01/31/94	0.9
02/01/94 to 03/03/94	0.4
03/04/94 to 04/06/94	0.9
04/07/94 to 05/06/94	1.8
05/07/94 to 06/03/94	1.6
06/04/94 to 07/06/94	Battery Failure
07/07/94 to 07/13/94	Battery Failure
07/14/94 to 08/04/94	2.1
08/05/94 to 08/31/94	2.3

Mine Road
Traffic Counter No. 4



Time Period	Average Daily Total
10/08/93 to 10/15/93	27.1
10/16/93 to 10/22/93	33.0
10/23/93 to 10/25/93	13.3
10/26/93 to 10/29/93	11.5
10/30/93 to 11/01/93	24.7
11/02/93 to 11/19/93	25.0
11/20/93 to 11/22/93	14.0
11/23/93 to 11/30/93	13.6
12/01/93 to 12/17/93	1.9
12/18/93 to 12/20/93	2.7
12/21/93 to 01/04/94	0.7
01/05/94 to 01/14/94	0.6
01/15/94 to 01/31/94	2.0
02/01/94 to 03/03/94	1.2
03/04/94 to 04/06/94	2.2
04/07/94 to 05/06/94	3.4
05/07/94 to 06/03/94	5.6
06/04/94 to 07/06/94	4.7
07/07/94 to 07/13/94	Battery Failure
07/14/94 to 08/04/94	6.4
08/05/94 to 08/31/94	10.4

Turnley Meadows Road
Traffic Counter No. 3



Time Period	Average Daily Total
10/06/93 to 10/08/93	8.5
10/09/93 to 10/15/93	5.3
10/16/93 to 10/22/93	2.0
10/23/93 to 10/25/93	12.3
10/26/93 to 10/29/93	11.3
10/30/93 to 11/01/93	13.0
11/02/93 to 11/19/93	6.6
11/20/93 to 11/22/93	7.0
11/23/93 to 11/30/93	4.8
12/01/93 to 12/17/93	0.4
12/18/93 to 12/20/93	3.0
12/21/93 to 01/04/94	0.4
01/05/94 to 01/14/94	0.5
01/15/94 to 01/31/94	0.2
02/01/94 to 03/03/94	0.0
03/04/94 to 04/06/94	0.5
04/07/94 to 05/06/94	1.2
05/07/94 to 06/03/94	2.5
06/04/94 to 07/06/94	3.2
07/07/94 to 07/13/94	3.9
07/14/94 to 08/04/94	3.0
08/05/94 to 08/31/94	2.4